PART II

System Resources
Chapter 4

Health Services Professionals

Learning Objectives

• To recognize the various types of health services professionals and their training, practice requirements, and practice settings
• To differentiate between primary care and specialty care and identify the causes for an imbalance between primary care and specialty care in the United States
• To learn about the extent of maldistribution in the physician labor force and to comprehend the reasons for such maldistribution
• To identify various remedies to help overcome the problems of physician imbalance and maldistribution
• To understand the role of nonphysician providers in health care delivery
• To appreciate allied health professionals and their role in health care delivery
• To discuss the functions and qualifications of health services administrators

“Hmm, they’re all beginning to look like me.”
Introduction

The US health care industry is the largest and most powerful employer in the nation. It constitutes more than 3% of the total labor force in the United States. In terms of total economic output, in 2009, the health care sector in the United States contributed 17.6% to the gross domestic product (Martin et al. 2010). The US Bureau of Labor Statistics (2005) projects 7 of the 10 fastest growing occupations for 2004–2014 are health related. Although jobs in many areas of the US economy shrank since the beginning of an economic recession in December 2007, the health care sector grew, adding 613,000 jobs. The growth has been most pronounced in the hospital industry. As the elderly population continues to grow, the demand for health care services will also increase. Hence, several health care and related occupations are projected to grow substantially. The Bureau of Labor Statistics projects the “healthcare practitioners and technical occupations” to grow by 21.4% and the “healthcare support occupations” by 28.8% during 2008–2018, whereas the entire US workforce is projected to grow by 10.1% during this period (US Bureau of Labor Statistics 2009).

Health services professionals include physicians, nurses, dentists, pharmacists, optometrists, psychologists, podiatrists, chiropractors, nonphysician practitioners (NPPs), health services administrators, and a variety of allied health professionals. The latter category incorporates therapists, laboratory and radiology technicians, social workers, and health educators. Health professionals are among the most well-educated and diverse of all labor groups. Almost all of these practitioner groups are now represented by their respective professional associations, which are listed in Appendix 4–A at the end of this chapter.

Health services professionals work in a variety of health care settings that include hospitals, managed care organizations (MCOs), nursing care facilities, mental health institutions, insurance firms, pharmaceutical companies, outpatient facilities, community health centers, migrant health centers, mental health centers, school clinics, physicians’ offices, laboratories, voluntary health agencies, professional health associations, colleges of medicine and allied health professions, and research institutions. Most health professionals are employed by hospitals (41.3%), followed by nursing and personal care facilities (11.8%) and physicians’ offices and clinics (10.3%) (Table 4–1).

Growth of health care services is closely linked to the demand for health services professionals. The expansion of the number and types of health services professionals closely follows population trends, advances in research and technology, disease and illness trends, and changes in health care financing and delivery of services. Population growth and the aging of the population enhance the demand for health services. Advances in scientific research contribute to new methods of preventing, diagnosing, and treating illness. New and complex medical techniques and machines are constantly introduced, and health services professionals must continually learn how to use these innovations. Specialization in medicine has contributed to the proliferation of different types of medical technicians. The changing patterns of disease, from acute to chronic, have led to a greater need for professionals who are formally prepared to address behavioral risk factors, their consequences, and their prevention. The widespread availability of insurance, from both the public and
the training and practice requirements for the various health professionals, their major roles, the practice settings in which they are employed, and some critical issues concerning their professions. Emphasis is placed on physicians because they play a leading role in the delivery of health care. There has been increased recognition of the role NPPs play in the delivery of primary care services. Notably, some basic medical functions that were traditionally performed by physicians alone are now performed by other trained professionals.

This chapter provides an overview of the large array of health services professionals employed in a vast assortment of health delivery settings. It briefly discusses the US health care delivery system is characterized by an imbalance between the private sectors, has contributed to the increase in medical care utilization, which has created a greater demand for health services professionals. Changes in reimbursement, from retrospective to prospective payment methods (see Chapter 6), and increased enrollment in managed care have contributed to a slowdown in cost escalation, a shift from inpatient to outpatient care, and an emphasis on the role of primary care providers.

Table 4–1  Persons Employed in Health Service Sites (145,362 employed civilians in 2008)

<table>
<thead>
<tr>
<th>Site</th>
<th>2000</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>All employed civilians</td>
<td>136,891</td>
<td>145,362</td>
</tr>
<tr>
<td>All health service sites</td>
<td>12,211</td>
<td>15,108</td>
</tr>
<tr>
<td>Offices and clinics of physicians</td>
<td>1,387</td>
<td>1,562</td>
</tr>
<tr>
<td>Offices and clinics of dentists</td>
<td>672</td>
<td>774</td>
</tr>
<tr>
<td>Offices and clinics of chiropractors</td>
<td>120</td>
<td>139</td>
</tr>
<tr>
<td>Offices and clinics of optometrists</td>
<td>95</td>
<td>110</td>
</tr>
<tr>
<td>Offices and clinics of other health</td>
<td>143</td>
<td>195</td>
</tr>
<tr>
<td>practitioners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outpatient care centers</td>
<td>772</td>
<td>1,107</td>
</tr>
<tr>
<td>Home health care services</td>
<td>548</td>
<td>881</td>
</tr>
<tr>
<td>Other health care services</td>
<td>1,027</td>
<td>1,647</td>
</tr>
<tr>
<td>Hospitals</td>
<td>5,202</td>
<td>6,241</td>
</tr>
<tr>
<td>Nursing care facilities</td>
<td>1,593</td>
<td>1,779</td>
</tr>
<tr>
<td>Residential care facilities, without nursing</td>
<td>652</td>
<td>673</td>
</tr>
</tbody>
</table>

Source: Data from Health, United States, 2009, p. 374.
primary and specialty care services, which has contributed to an imbalance in the ratio of generalists to specialists. There is also a geographic maldistribution of practitioners. This chapter discusses the main causes for these disparities and explores possible solutions. Although a detailed discussion of primary care is provided in Chapter 7, this chapter highlights some of the main differences between primary and specialty care.

**Physicians**

In the delivery of health services, physicians play a central role by evaluating a patient’s health condition, diagnosing abnormalities, and prescribing treatment. Some physicians are engaged in medical education and research to find new and better ways to control and cure health problems. Many are involved in the prevention of illness.

All states require physicians to be licensed to practice. The licensure requirements include graduation from an accredited medical school that awards a Doctor of Medicine (MD) or Doctor of Osteopathic Medicine (DO) degree, successful completion of a licensing examination governed by either the National Board of Medical Examiners or the National Board of Osteopathic Medical Examiners, and completion of a supervised internship/residency program. The term residency refers to graduate medical education in a specialty that takes the form of paid on-the-job training, usually in a hospital. Before entering a residency, which may last 2 to 6 years, most DOs serve a 12-month rotating internship after graduation.

The number of active physicians, both MDs and DOs, has steadily increased from 14.1 physicians per 10,000 population in 1950 to 30.4 per 10,000 population in 2005 (Table 4–2). Of the 159 medical schools in the United States, 133 teach allopathic medicine and award a Doctor of Medicine (MD) degree; 29 teach osteopathic medicine and award the Doctor of Osteopathic Medicine (DO) degree (US Bureau of Labor Statistics 2011).

**Similarities and Differences Between MDs and DOs**

Both MDs and DOs use accepted methods of treatment, including drugs and surgery. The two differ mainly in their philosophies and approaches to medical treatment. Osteopathic medicine, practiced by DOs, emphasizes the musculoskeletal system of the body, such as correction of joints or tissues. In their treatment plans, DOs stress preventive medicine, such as diet and environment as factors that might influence natural resistance. They take a holistic approach to patient care. MDs are trained in allopathic medicine, which views medical treatment as active intervention to produce a counteracting reaction in an attempt to neutralize the effects of disease. MDs, particularly generalists, may also use preventive medicine, along with allopathic treatments. About 5% of all active physicians are osteopaths (American Association of Colleges of Osteopathic Medicine 2007). About 42% of MDs and more than one-half of DOs work in primary care (US Bureau of Labor Statistics 2011).

**Generalists and Specialists**

Most DOs are generalists and most MDs are specialists. In the United States, physicians...
Physicians 125

Table 4–2  Active US Physicians, According to Type of Physician and Number per 10,000 Population

<table>
<thead>
<tr>
<th>Year</th>
<th>All Active Physicians</th>
<th>Doctors of Medicine</th>
<th>Doctors of Osteopathy</th>
<th>Active Physicians per 10,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>219,900</td>
<td>209,000</td>
<td>10,900</td>
<td>14.1</td>
</tr>
<tr>
<td>1960</td>
<td>259,500</td>
<td>247,300</td>
<td>12,200</td>
<td>14.0</td>
</tr>
<tr>
<td>1970</td>
<td>326,500</td>
<td>314,200</td>
<td>12,300</td>
<td>15.6</td>
</tr>
<tr>
<td>1980</td>
<td>427,122</td>
<td>409,992</td>
<td>17,130</td>
<td>19.0</td>
</tr>
<tr>
<td>1990</td>
<td>567,610</td>
<td>539,616</td>
<td>27,994</td>
<td>22.4</td>
</tr>
<tr>
<td>1995</td>
<td>672,859</td>
<td>637,192</td>
<td>35,667</td>
<td>25.0</td>
</tr>
<tr>
<td>2000</td>
<td>772,296</td>
<td>727,573</td>
<td>44,723</td>
<td>27.0</td>
</tr>
<tr>
<td>2001</td>
<td>793,263</td>
<td>751,689</td>
<td>41,574</td>
<td>27.4</td>
</tr>
<tr>
<td>2005*</td>
<td>902,053</td>
<td>844,604</td>
<td>57,449</td>
<td>30.4</td>
</tr>
</tbody>
</table>


trained in family medicine/general practice, general internal medicine, and general pediatrics are considered primary care physicians (PCPs) or generalists (Rich et al. 1994). In general, PCPs provide preventive services (e.g., health examinations, immunizations, mammograms, Papanicolaou smears) and treat frequently occurring and less severe problems. Problems that occur less frequently or that require complex diagnostic or therapeutic approaches may be referred to specialists.

Physicians in nonprimary care specialties are referred to as specialists. Specialists must seek certification in an area of medical specialization, which commonly requires additional years of advanced residency training, followed by several years of practice in the specialty. A specialty board examination is often required as the final step in becoming a board certified specialist. The common medical specialties, along with brief descriptions, are listed in Exhibit 4–1. Medical specialties may be divided into six major functional groups: (1) the subspecialties of internal medicine; (2) a broad group of medical specialties; (3) obstetrics and gynecology; (4) surgery of all types; (5) hospital-based radiology, anesthesiology, and pathology; and (6) psychiatry (Cooper 1994). The distribution of physicians by specialty appears in Table 4–3. PCPs often coordinate referrals with members of these specialty groups based on an initial evaluation of the patient’s medical needs.

Work Settings and Practice Patterns

Physicians practice in a variety of settings and arrangements. Some work in hospitals
### Exhibit 4–1 Definitions of Medical Specialties and Subspecialties

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergists</td>
<td>Treat conditions and illnesses caused by allergies or related to the immune system</td>
</tr>
<tr>
<td>Anesthesiologists</td>
<td>Use drugs and gases to render patients unconscious during surgery</td>
</tr>
<tr>
<td>Cardiologists</td>
<td>Treat heart diseases</td>
</tr>
<tr>
<td>Dermatologists</td>
<td>Treat infections, growths, and injuries related to the skin</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>Work specifically in emergency departments, treating acute illnesses and emergency situations, for example, trauma</td>
</tr>
<tr>
<td>Family Physicians</td>
<td>Are prepared to handle most types of illnesses and involve the care of the patient as a whole</td>
</tr>
<tr>
<td>General Practitioners</td>
<td>Similar to family physicians — examine patients or order tests and have X-rays done to diagnose illness and treat the patient</td>
</tr>
<tr>
<td>Geriatricians</td>
<td>Specialize in problems and diseases that accompany aging</td>
</tr>
<tr>
<td>Gynecologists</td>
<td>Specialize in the care of the reproductive system of women</td>
</tr>
<tr>
<td>Internists</td>
<td>Treat diseases related to the internal organs of the body, for example, conditions of the lungs, blood, kidneys, and heart</td>
</tr>
<tr>
<td>Neurologists</td>
<td>Treat disorders of the central nervous system and order tests necessary to detect diseases</td>
</tr>
<tr>
<td>Obstetricians</td>
<td>Work with women throughout their pregnancy, deliver infants, and care for the mother after the delivery</td>
</tr>
<tr>
<td>Oncologists</td>
<td>Specialize in the diagnosis and treatment of cancers and tumors</td>
</tr>
<tr>
<td>Ophthalmologists</td>
<td>Treat diseases and injuries of the eye</td>
</tr>
<tr>
<td>Otolaryngologists</td>
<td>Specialize in the treatment of conditions or diseases of the ear, nose, and throat</td>
</tr>
<tr>
<td>Pathologists</td>
<td>Study the characteristics, causes, and progression of diseases</td>
</tr>
<tr>
<td>Pediatricians</td>
<td>Provide care for children from birth to adolescence</td>
</tr>
<tr>
<td>Preventive Medicine</td>
<td>Includes occupational medicine, public health, and general preventive treatments</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>Help patients recover from mental illness and regain their mental health</td>
</tr>
<tr>
<td>Radiologists</td>
<td>Perform diagnosis and treatment by the use of X-rays and radioactive materials</td>
</tr>
<tr>
<td>Surgeons</td>
<td>Operate on patients to treat disease, repair injury, correct deformities, and improve the health of patients</td>
</tr>
<tr>
<td>General Surgeons</td>
<td>Perform many different types of surgery, usually of relatively low degree of difficulty</td>
</tr>
<tr>
<td>Neurologic Surgeons</td>
<td>Specialize in surgery of the brain, spinal cord, and nervous system</td>
</tr>
<tr>
<td>Orthopaedic Surgeons</td>
<td>Specialize in the repair of bones and joints</td>
</tr>
<tr>
<td>Plastic Surgeons</td>
<td>Repair malformed or injured parts of the body</td>
</tr>
<tr>
<td>Thoracic Surgeons</td>
<td>Perform surgery in the chest cavity, for example, lung and heart surgery</td>
</tr>
<tr>
<td>Urologists</td>
<td>Specialize in conditions of the urinary tract in both sexes and of the sexual/reproductive system in males</td>
</tr>
</tbody>
</table>

Table 4–3  US Physicians, According to Activity and Place of Medical Education, 2004

<table>
<thead>
<tr>
<th>Activity and Place of Medical Education</th>
<th>Numbers</th>
<th>Percentage</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors of medicine (professionally active)*</td>
<td>776,554</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Place of medical education:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US medical graduates</td>
<td>580,336</td>
<td>74.7</td>
<td></td>
</tr>
<tr>
<td>International medical graduates</td>
<td>196,218</td>
<td>25.3</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient care</td>
<td>732,234</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Office-based practice</td>
<td>562,897</td>
<td>76.9</td>
<td>13.5</td>
</tr>
<tr>
<td>General and family practice</td>
<td>75,952</td>
<td>13.5</td>
<td></td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>17,504</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>Dermatology</td>
<td>9,036</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>10,042</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>Internal medicine</td>
<td>108,552</td>
<td>19.3</td>
<td></td>
</tr>
<tr>
<td>Pediatrics</td>
<td>52,095</td>
<td>9.3</td>
<td></td>
</tr>
<tr>
<td>Pulmonary diseases</td>
<td>7,490</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>General surgery</td>
<td>25,434</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>Obstetrics and gynecology</td>
<td>34,405</td>
<td>6.1</td>
<td></td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>15,852</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Orthopaedic surgery</td>
<td>19,299</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>8,177</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Plastic surgery</td>
<td>6,100</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>Urological surgery</td>
<td>8,796</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>31,617</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>Diagnostic radiology</td>
<td>17,327</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>Emergency medicine</td>
<td>20,036</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>Neurology</td>
<td>10,476</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Pathology, anatomical/clinical</td>
<td>11,191</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Psychiatry</td>
<td>27,492</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Radiology</td>
<td>6,913</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Other specialty</td>
<td>39,111</td>
<td>6.9</td>
<td></td>
</tr>
<tr>
<td>Hospital-based practice</td>
<td>169,337</td>
<td>23.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Residents and interns</td>
<td>98,688</td>
<td>56.5</td>
<td></td>
</tr>
<tr>
<td>Full-time hospital staff</td>
<td>70,649</td>
<td>41.7</td>
<td></td>
</tr>
</tbody>
</table>

*Excludes inactive, not classified, and address unknown.
Source: Data from Health, United States, 2009, p. 376.
CHAPTER 4 • Health Services Professionals

as medical residents or staff physicians. Others work in the public sector, such as federal government agencies, public health clinics, community and migrant health centers, schools, and prisons. Most physicians, however, are office-based practitioners, and most physician contacts occur in physician offices. An increasing number of physicians are partners or salaried employees under contractual arrangements, working in various outpatient settings, such as group practices, freestanding ambulatory care clinics, diagnostic imaging centers, and MCOs.

Figure 4–1 shows that, in 2007, physicians in general/family practice accounted for the greatest proportion of ambulatory care visits, followed by those in internal medicine and pediatrics.

Other medical practice characteristics appear in Table 4–4. For example, physicians in obstetrics and gynecology spent the most hours in patient care per week, even exceeding those in surgery. Surgeons, however, had the highest average annual net income. Operating expenses and malpractice insurance premiums were the highest in obstetrics/gynecology.

Differences Between Primary and Specialty Care

Primary care may be distinguished from specialty care, according to the time, focus, and scope of the services provided to patients. The five main areas of distinction are as follows:

1. In linear time sequence, primary care is first-contact care and is regarded as the portal to the health care system (Kahn et al. 1994). Specialty care, when needed, generally follows primary care.

2. In a managed care environment in which health services functions are integrated, PCPs serve as gatekeepers, an important role in controlling cost, utilization, and the rational allocation of resources. In the gatekeeping model, specialty care requires referral from a primary care physician.

Figure 4–1: Ambulatory Care Visits to Physicians According to Physician Specialty, 2007.

![Bar chart showing ambulatory care visits by specialty](chart.png)

Source: Data from Health, United States, 2002, pp. 343–344.
a condition referred to as comorbidity. In such cases, attention from a specialist focusing on one problem may make another problem worse. Primary care, in essence, seeks to balance the multiple requirements a patient’s condition might call for and refers patients to appropriate specialty care when needed. Specialty care is also associated with secondary and tertiary levels of services (see secondary care and tertiary care in the Glossary).

3. Primary care is longitudinal. In other words, primary care providers follow through the course of treatment and coordinate various activities, including initial diagnosis, treatment, referral, consultation, monitoring, and follow-up. Primary care providers serve as patient advisors and advocates (Williams 1994). Their coordinating role is especially important in the provision of continuing care for chronic conditions. Specialty care is episodic and, thus, more focused and intense.

4. Primary care focuses on the person as a whole, whereas specialty care centers on particular diseases or organ systems of the body. Primary care is holistic in nature and provides an integrating function. Patients often have multiple problems,
5. The difference in scope is reflected in how primary and specialty care providers are trained. Primary care students spend a significant amount of time in ambulatory care settings, familiarizing themselves with a variety of patient conditions and problems. Students in medical subspecialties spend significant time in inpatient hospitals, where they are exposed to state-of-the-art medical technology.

The Expanding Role of Hospitalists

Since the mid-1990s, an increasing amount of inpatient medical care in the United States has been delivered by hospitalists, physicians who specialize in the care of hospitalized patients (Schneller 2006). Hospitalists do not usually have a relationship with the patient prior to hospitalization. Essentially, the patient’s primary care provider entrusts the oversight of the patient’s care to a hospitalist upon admission, and the patient returns to the regular physician after discharge (Freed 2004). Approximately 12,000 hospitalists practice in the United States, and the field is estimated to soon grow to 30,000, exceeding the number of cardiologists (Sehgal and Wachter 2006).

The growth of hospitalists is influenced by the desire of hospital executives, HMOs, and medical groups to reduce inpatient costs and increase efficiency, without compromising quality or patient satisfaction. Published research shows that using hospitalists does, in fact, achieve these goals (Wachter 2004). Research findings have also put to rest initial concerns from PCPs, who were accustomed to the traditional method of rounding on their hospitalized patients. PCPs had voiced concerns about discontinuity of care and patients’ acceptance of the new practice (Wachter 2004). Recently, the debate over hospitalists has largely shifted from quality and efficiency to optimizing hospitalists’ skills and expanding their roles (Sehgal and Wachter 2006). Hospitalists are not yet certified as a distinct subspecialty of medicine. However, hospitalists convene for large annual meetings and have their own textbook, journal (the Journal of Hospital Medicine), and specialty society (Sehgal and Wachter 2006). Their role in the American medical system is expected to continue to increase in importance.

Issues in Medical Practice, Training, and Supply

Medical Practice

Research has shown that the way physicians practice medicine and prescribe treatments for similar conditions varies significantly because clinical decisions made by physicians are not always based on strong evidence founded on clinical research (Field and Lohr 1992). Physicians have at their disposal an increasing number of therapeutic options because of the exponential growth in medical science and technology. Conversely, increasing health care costs continue to threaten the viability of the health care delivery system. The responsibilities placed on physicians to perform difficult balancing acts between the availability of the most advanced treatment plans, uncertainties about their potential benefits, and whether the higher costs of treatment are justified have created a confusing environment. Hence, support has been growing for the development and refinement of standardized clinical guidelines to streamline clinical decision making and improve
quality of care (discussed in Chapter 12). However, there have been some criticisms about the applicability, flexibility, and objectivity of some guidelines. Although the number of conditions for which guidelines are available is steadily increasing, guidelines for combinations of conditions are not often available. Furthermore, many of the recommendations incorporated in the most well-accepted clinical guidelines permit much flexibility to practicing physicians, making it difficult to determine whether the care physicians decide to give complies with recommendations in the guidelines (Garber 2005). To address this issue, the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA) (Sec. 304(b)) required the secretary of DHHS to conduct a study with the Institute of Medicine (IOM) to ensure that “objective, scientifically valid, and consistent” approaches are employed by organizations that develop clinical practice guidelines (Redhead and Williams 2010).

**Medical Training**

The principal source of funding for graduate medical education is the Medicare program, which provides explicit payments to teaching hospitals for each resident in training. The government, however, does not mandate how these physicians should be trained. By contrast, in Great Britain, the government finances all residency slots and controls the number of positions by specialty. In Canada, the number of positions funded by the provincial ministries of health is determined in negotiations among the medical schools, provincial governments, and physician associations.

Emphasis on hospital-based training in the United States has produced too many specialists. In the meanwhile, the health care delivery system is evolving toward primary care orientation. The result is that many physicians in the workforce today are ill-prepared to practice in the wellness-oriented, ambulatory-based environment (American Physical Therapy Association 1998).

**Aggregate Physician Oversupply**

Aided by tax-financed subsidies, the United States has experienced a sharp increase in its physician labor force. Between 1950 and 1990, the supply of physicians increased by 173% (Health Resources and Services Administration 1996), and it has steadily increased since then (Figure 4–2). In 1950, there were 142 physicians per 100,000 population. By 2008, this number had increased to 270 per 100,000 population (US Census Bureau 2010). This number far surpasses the estimated 145 to 185 physicians per 100,000 population that the United States actually needs, according to the Council on Graduate Medical Education (COGME). The number of active physicians under age 75 is expected to grow from approximately 817,500 in 2005 to 951,700 by 2020 (HRSA/BHP 2006). The growth, however, has been mainly for specialists. The COGME has warned that there could be a physician deficit of 85,000 by 2020 and has recommended increases in medical school and residency output. On the other hand, contributions of other clinicians and changes in how medical care is delivered in the future would likely offset physician deficits (Phillips et al. 2005).

**Maldistribution**

A surplus of physicians leads to unnecessary increases in health care expenditures. A shortage, however, adversely affects the delivery
Physicians are more likely to concentrate in metropolitan and suburban areas than in rural and inner city areas because the former offer greater prospects for high income; professional interaction; access to modern facilities and technology; continuing education and professional growth; higher standards of living; and such social amenities as cultural diversity, recreational activities, and quality of education for children. Also, rural areas lack the economic capacity to support additional physicians. Problems contributing to the difficulties in recruiting physicians in rural areas include long working hours, requirements to frequently be on call, smaller financial rewards, and a greater degree of professional isolation, such as limited access to high technology, which is more commonly available in urban medical centers (Kohler 1994).

Several federal programs have demonstrated success in increasing the supply of primary care services in rural areas. Some of these programs are discussed in Chapter 11. They include the National Health Service...
Physicians are more likely to be attracted to rural practice if they have a rural background or exposure to rural practice settings in their clinical training. To ensure a sufficient supply of rural physicians, a comprehensive approach is recommended. Such an approach would facilitate admission to medical schools for students from rural communities, foster premedical training in rural settings, create and use rural preceptorships or externships and rural residency training programs to expose medical students to the practice of medicine among disadvantaged populations.

Targeted programs for underserved areas include setting up task forces or commissions, offices of rural health, and increased funding for training and incentive programs to encourage health professionals to choose primary care and practice in rural and underserved areas. Schools that train health professionals can incorporate the concerns of practicing in underserved areas into medical curricula. Specific training can be directed at practice management, cost-effective care, preventive care, and the coordination of community resources and services. Continued efforts are needed for medical schools to find ways to recruit underserved minority groups, such as African Americans and Hispanics (see Table 4–5 for the racial distribution of medical school enrollment). Although various steps can be taken to address the issue, unfortunately, distributional shortages of physicians are likely to persist in many rural and selected inner city areas.

**Specialty Maldistribution**

Besides geographic maldistribution of physicians, a considerable imbalance exists between primary and specialty care in the...
Figure 4–3 illustrates trends in the supply of PCPs. From 1979 to 1999, the supply of family practitioners per 100,000 people in the United States increased only 18%, whereas the supply of medical specialists increased by 118% (Goodman 2004). The United States. Approximately 42% of physicians work in primary care; the remaining 58% are specialists (US Bureau of Labor Statistics 2011). In other industrialized countries, only 25 to 50% of physicians are specialists (Schroeder 1992).

### Table 4–5 Percentage of Total Enrollment of Students for Selected Health Occupations, 2006–2007

<table>
<thead>
<tr>
<th>Race</th>
<th>Allopathic</th>
<th>Osteopathic</th>
<th>Dentistry</th>
<th>Pharmacy</th>
<th>Nursing Baccalaureate</th>
</tr>
</thead>
<tbody>
<tr>
<td>All races</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>62.9</td>
<td>71.1</td>
<td>61.3</td>
<td>60.2</td>
<td>75.2</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>7.3</td>
<td>4.1</td>
<td>5.8</td>
<td>6.7</td>
<td>12.4</td>
</tr>
<tr>
<td>Hispanic</td>
<td>7.6</td>
<td>3.8</td>
<td>5.9</td>
<td>3.9</td>
<td>5.4</td>
</tr>
<tr>
<td>American Indian</td>
<td>0.9</td>
<td>0.6</td>
<td>0.6</td>
<td>0.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Asian</td>
<td>21.2</td>
<td>16.8</td>
<td>22.4</td>
<td>21.2</td>
<td>6.3</td>
</tr>
</tbody>
</table>

Source: Data from Health, United States, 2009, p. 381.
number of positions filled in family practice residency programs showed an increase during the first few years of the 1990s, but there has been a slow decline since 1998 (Pugno et al. 2001). A decreasing number of physicians have been entering primary care. Also, about one in six general internists leave their practice by midcareer either due to dissatisfaction or by moving into a subspecialty of internal medicine (Bylsma et al. 2010). An increasing number of international medical graduates (IMGs) practicing in the United States have helped alleviate the shortage of PCPs.

Specialty maldistribution has become ingrained in the US health care delivery system for three main reasons: medical technology, reimbursement methods and remuneration, and specialty-oriented medical education. Conversely, the need for PCPs is determined mainly by the demographics of the general population.

The major driving force behind the increasing number of specialists is the development of medical technology. Most hospitals with more than 100 beds try to become clinical centers offering medical services in all major specialty fields and, consequently, employ specialists in these fields (Friedenberg 1996). Most insured patients, because they are shielded from the financial burden of health care, have the tendency to turn to physicians who provide them the most up-to-date, sophisticated treatment. Because the population increases at a significantly slower rate than technological advancements, the gap between primary and specialty care workforces continues to expand.

Higher incomes of specialists relative to PCPs have also contributed to an oversupply of specialists. In the last few years, reimbursement systems designed to increase payments to PCPs have been implemented, but wide disparities between the incomes of generalists and specialists continue (Table 4–6).

Specialists not only earn higher incomes, but they also have more predictable work hours and enjoy higher prestige among their colleagues and the public at large (Rosenblatt and Lishner 1991; Samuels and Shi 1993). High status and prestige are accorded to tertiary care and specialties employing high technology. Such considerations influence medical students’ career decisions.

The medical education environment in the United States is organized according to specialties and controlled by those who have achieved leadership positions by demonstrating their abilities in narrow scientific or clinical areas. Medical education in the United States emphasizes technology, intensive procedures, and tertiary care settings, which are generally more appealing to medical students than more rudimentary

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Mean Annual Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anesthesiologists</td>
<td>211,750</td>
</tr>
<tr>
<td>Family and general practitioners</td>
<td>168,550</td>
</tr>
<tr>
<td>Internists, general</td>
<td>183,990</td>
</tr>
<tr>
<td>Obstetricians and gynecologists</td>
<td>204,470</td>
</tr>
<tr>
<td>Pediatricians, general</td>
<td>161,410</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>163,660</td>
</tr>
<tr>
<td>Surgeons</td>
<td>219,770</td>
</tr>
<tr>
<td>Physicians and surgeons, all other</td>
<td>173,860</td>
</tr>
</tbody>
</table>


The imbalance between generalists and specialists has several undesirable consequences. Having too many specialists has contributed to the high volume of intensive, expensive, and invasive medical services, as well as to the rise in health care costs (Greenfield et al. 1992; Rosenblatt 1992; Schroeder and Sandy 1993; Wennberg et al. 1993). A greater supply of surgeons increases the demand for initial contacts with surgeons (Escarce 1992). In fact, the rate of surgery in the United States grew at twice the rate of the population from 1979 to 1986 (Kramon 1991). Seeking care directly from specialists is often less effective than using primary care because the latter attempts to provide early intervention before complications develop (Starfield 1992; Starfield and Simpson 1993). Higher levels of primary care professionals are associated with lower overall death and lower mortality rates due to diseases of the heart and cancer (Shi 1992, 1994). PCPs have been the major providers of care to minorities, the poor, and people living in underserved areas (Ginzberg 1994; Starr 1982). Hence, the underserved populations suffer the most from shortages of PCPs.

To help alleviate the shortage of PCPs, some medical schools strive to develop students’ competencies in skills, values, and attitudes relevant to the practice of primary care. Their curricula are adapted toward issues of special concern to generalists, such as outpatient experience; public health concepts; disease prevention; and cultural, ethnic, and population-specific knowledge. They develop opportunities for students to work with the poor, minorities, and the uninsured and make such opportunities available in rural and other underserved areas (Verby et al. 1991).

The methods of financing medical training, research, and physician services have built-in incentives for specialty-oriented training and disincentives for primary care training (Institute of Medicine 1989; Wennberg et al. 1993). With respect to medical training, the system of graduate medical education payments through Medicare is based on the number of trainees rather than prioritizing medical specialties that are more needed. With respect to research, much of the clinical research, funded by the National Institutes of Health, is carried out under the auspices of specialty departments of medical schools (Ginzberg and Dutka 1989) and the research topics are often very narrowly focused.

With respect to physician payment, current reimbursement structures lack appropriate financial incentives aimed at advancing health promotion, disease prevention, and other primary care services. Incentives are also needed to reinforce primary care-seeking behavior among patients. For example, primary care services should be exempt from deductibles and copayments. Out-of-pocket costs discourage primary care-seeking behavior and, eventually, lead to higher health care expenditures and poorer health outcomes (Lurie et al. 1986).

**International Medical Graduates**

The ratio of IMGs to population has steadily grown over time (Figure 4–2) and so has the proportion of IMGs to total active physicians practicing in the United States (Figure 4–4). About 25% of professionally active physicians in the United States are IMGs, also known as foreign medical graduates (Cohen 2006). This translates to more than 150,000 active IMGs in the United States physician
**Dentists**

Dentists diagnose and treat dental problems related to the teeth, gums, and tissues of the mouth. All dentists must be licensed to practice. The licensure requirements include graduation from an accredited dental school that awards a Doctor of Dental Surgery (DDS) or Doctor of Dental Medicine (DMD) degree and successful completion of both written and practical examinations. Some states require dentists to obtain a specialty license before practicing as a specialist in that state (Stanfield et al. 2009). Nine specialty areas are recognized by the American Dental Association: orthodontics (straightening teeth), oral and maxillofacial surgery (operating on the mouth and jaws), oral and maxillofacial radiology (producing and interpreting images of the mouth and jaws), pediatric dentistry (dental care for children), periodontics (treating gums), prosthodontics (making artificial teeth or dentures), endodontics (root canal therapy), public health dentistry (community dental health), and oral pathology (diseases of the mouth). The growth of dental specialties is influenced by technological advances, including implant dentistry, laser-guided surgery, orthognathic surgery (surgery performed on the bones of the jaw) for the restoration of facial form and function, new metal combinations for use in prosthetic devices, new bone graft materials in “tissue-guided regeneration” techniques, and new materials and instruments.

Many dentists are involved in the prevention of dental decay and gum disease. Dental prevention includes regular cleaning of patients’ teeth and educating patients on
proper dental hygiene. Dentists also spot symptoms that require treatment by a physician. Dentists employ dental hygienists and assistants to perform many of the preventive and routine care services.

**Dental hygienists** work in dental offices and provide preventive dental care, including cleaning teeth and educating patients on proper dental care. Dental hygienists must be licensed to practice. The licensure requirements include graduation from an accredited school of dental hygiene and successful completion of both a national board written examination and a state or regional clinical examination. Many states require further examination on legal aspects of dental hygiene practice.

**Dental assistants** work for dentists in the preparation, examination, and treatment of patients. Dental assistants do not have to be licensed to work; however, formal training programs that offer a certificate or diploma are available. Dental assistants, typically, work alongside dentists.

Most dentists practice in private offices as solo or group practitioners. As such, dental offices are operated as private businesses, and dentists often perform business tasks, such as staffing, financing, purchasing, leasing, and work scheduling. Some dentists are employed in clinics operated by private companies, retail stores, or franchised dental outlets. Group dental practices, offering lower overhead and increased productivity, have slowly grown. The federal government also employs dentists, mainly in the hospitals and clinics of the Department of Veterans Affairs and the US Public Health Service. Mean annual earnings of salaried dentists were $156,850 in 2009 (US Bureau of Labor Statistics 2010).

The emergence of employer-sponsored dental insurance caused an increased demand for dental care because it enabled a greater segment of the population to afford dental services. The demand for dentists will continue to grow with an increase in populations having high dental needs, such as the elderly, and an increase in public awareness of the importance of dental care toward general health status. Demand will also be affected by the fairly widespread appeal of cosmetic and esthetic dentistry, the prevalence of dental insurance plans, and the inclusion of dental care as part of many public-funded programs, such as Head Start, Medicaid, community and migrant health centers, and maternal and infant care.

### Pharmacists

The traditional role of **pharmacists** has been to dispense medicines prescribed by physicians, dentists, and podiatrists and to provide consultation on the proper selection and use of medicines. All states require a license to practice pharmacy. The licensure requirements include graduation from an accredited pharmacy program that awards a Bachelor of Pharmacy or Doctor of Pharmacy (PharmD) degree, successful completion of a state board examination, and practical experience or completion of a supervised internship (Stanfield et al. 2009). After 2005, the bachelor’s degree was phased out, and a PharmD, requiring six years of post-secondary education, became the standard. The mean annual earnings of pharmacists in 2009 were $106,630 (US Bureau of Labor Statistics 2010).

Although most pharmacists are generalists, dispensing drugs and advising providers and patients, some become specialists. Pharmacotherapists specialize in drug therapy and work closely with physicians. Nutrition-
Other Doctoral-Level Health Professionals

In addition to physicians, dentists, and some pharmacists, other health professionals have doctoral education, including optometrists, psychologists, podiatrists, and chiropractors.

Optometrists provide vision care, such as examination, diagnosis, and correction of vision problems. They must be licensed to practice. The licensure requirements include the possession of a Doctor of Optometry (OD) degree and passing a written and clinical state board examination. Most optometrists work in solo or group practices. Some work for the government, optical stores, or vision care centers as salaried employees.

Psychologists provide patients with mental health care. They must be licensed or certified to practice. The ultimate recognition is the diplomate in psychology, which requires a Doctor of Philosophy (PhD) or Doctor of Psychology (PsyD) degree, a minimum of 5 years' postdoctoral experience, and the successful completion of an examination by the American Board
of Examiners in Professional Psychology. Psychologists may specialize in several areas, such as clinical, counseling, developmental, educational, engineering, personnel, experimental, industrial, psychometric, rehabilitation, school, and social domains (Stanfield et al. 2009).

**Podiatrists** treat patients with diseases or deformities of the feet, including performing surgical operations, prescribing medications and corrective devices, and administering physiotherapy. They must be licensed to practice. Requirements for licensure include completion of an accredited program that awards a Doctor of Podiatric Medicine (DPM) degree and passing a national examination by the National Board of Podiatry. Most podiatrists work in private practice, but some are salaried employees of health service organizations.

**Chiropractors** provide treatment to patients through chiropractic (done by hand) manipulation, physiotherapy, and dietary counseling. They typically help patients with neurological, muscular, and vascular disturbances. Chiropractic care is based on the belief that the body is a self-healing organism. Chiropractors do not prescribe drugs or perform surgery. Chiropractors must be licensed to practice. Requirements for licensure include completion of an accredited program that awards a 4-year Doctor of Chiropractic (DC) degree and passing an examination by the state chiropractic board. Most chiropractors work in private solo or group practice.

**Nurses**

Nurses constitute the largest group of health care professionals. The nursing profession developed around hospitals after World War I, primarily attracting women. Before that time, more than 70% of nurses worked in private duty, either in patients’ homes or for private-pay patients in hospitals. Hospital-based nursing flourished after the war as the effectiveness of nursing care became apparent. Federal support of nursing education increased after World War II, represented by the Nursing Training Act of 1964, the Health Manpower Act of 1968, and the Nursing Training Act of 1971; however, state funding remains the primary source of financial support for nursing schools.

Nurses are the major caregivers of sick and injured patients, addressing their physical, mental, and emotional needs. All states require nurses to be licensed to practice. Nurses can be licensed in more than one state through examination or endorsement of a license issued by another state. The licensure requirements include graduation from an approved nursing program and successful completion of a national examination. Educational preparation distinguishes between two levels of nurses. **Registered nurses** (RNs) must complete an associate’s degree (ADN), a diploma program, or a baccalaureate degree (BSN). ADN programs take about 2 to 3 years and are offered by community and junior colleges. Diploma programs take 2 to 3 years and are still offered by a few hospitals. BSN programs take 4 to 5 years and are offered by colleges and universities (Stanfield et al. 2009). **Licensed practical nurses** (LPNs)—called licensed vocational nurses (LVNs) in some states—must complete a state-approved program in practical nursing and a national written examination. Most practical nursing programs last about one year and include classroom study, as well as supervised clinical practice.

Nurses work in a variety of settings, including hospitals, nursing homes,
Between 2001 and 2008, the total full-time equivalent (FTE) RN workforce increased by 476,000. During this time period, older RNs accounted for about two-third of the total increase, and about one-third was supplied by foreign-born RNs (Buerhaus et al. 2009). Such composition of the RN workforce has raised issues regarding supply and quality of care. With large “baby-boom” RN cohorts retiring during the next decade, the RN workforce is expected to experience a shortage, although large cohorts born in the 1970s and 1980s may prevent the workforce from shrinking (Buerhaus et al. 2009). Thus, strategies to ensure the long-term supply of younger RNs are warranted. Communication skills of foreign-born RNs have also become an issue pertaining to quality of care and patient safety. Since it is likely that the demand for foreign-educated RNs will increase to meet the growing demand for health care workforce, interventions must take place to improve communication skills among both US-native and foreign-born RNs (Buerhaus et al. 2009).

Projections of the future need for nurses indicate there will be a deficit of 340,000 nurses in 2020 (Auerbach et al. 2007). To make the nursing profession more attractive, health services organizations need to initiate measures, such as creating incentive packages to attract new nurses, increasing pay and benefits of current nurses, introducing more flexible work schedules, awarding tuition reimbursement for continuing education, and providing on-site day care assistance.

Advanced Practice Nurses

The term advanced practice nurse (APN) is a general classification of nurses who have education and clinical experience beyond that required of an RN. APNs include four
Nonphysician Practitioners

The terms *nonphysician practitioners* (NPPs), nonphysician clinicians (NPCs), and midlevel providers (MLPs) refer to clinical professionals who practice in many of the areas similar to those in which physicians practice but who do not have an MD or a DO degree. NPPs receive less advanced training than physicians but more training than RNs. They are also referred to as *physician extenders* because in the delivery of primary care, they can, in many instances, substitute for physicians. However, they do not engage in the entire range of primary care or deal with complex cases requiring the expertise of a physician (Cooper et al. 1998). Hence, NPPs often work in close consultation with physicians. Efforts to formally establish the NPP role began in the late 1960s, in recognition of the fact that they could improve access to primary care, especially in rural areas. NPPs include physician assistants (PAs), NPs, and CNMs.

Nurse Practitioners

The American Nurses’ Association defines *nurse practitioners* as individuals who have completed a program of study leading to competence as RNs in an expanded role. NPs constitute the largest group of NPPs and the group that has undergone the most growth (Cooper et al. 1998). As of 2010, there were approximately 140,000 NPs in the United States (American Academy of Nurse Practitioners 2010).

Close to 6,000 new NPs are trained every year in 325 colleges and universities (American Association of Nurse Practitioners 2007). The training of NPs may be a certificate program (at least 9 months in duration) or a master’s degree program (2 years
Nonphysician Practitioners

Physician Assistants

The American Academy of Physician Assistants (1986) defines physician assistants "as part of the healthcare team . . . [who] work in a dependent relationship with a supervising physician to provide comprehensive care." In 2009, there were approximately 76,900 jobs available for PAs in the United States (US Bureau of Labor Statistics 2010). The number of PA jobs is greater than the number of PAs because about 15% of PAs work more than one job.

PAs are licensed to perform medical procedures only under the supervision of a physician. In the delivery of care by a PA, the supervising physician may be either on-site or off-site. The major services provided by PAs include evaluation, monitoring, diagnostics, therapeutics, counseling, and referral (Fizgerald et al. 1995). As of 2005, 135 accredited PA training programs were operating in the United States, with a steady growth in enrollment (US Bureau of Labor Statistics 2007). PA programs award bachelor’s degrees, certificates, associate degrees, or master’s degrees. The mean length of the program is 26 months (Hooker and Berlin 2002). PAs are certified by the National Commission on Certification of Physician Assistants. In most states, PAs have the authority to prescribe medications.

Certified Nurse Midwives

Certified nurse midwives are RNs with additional training from a nurse midwifery program, in areas such as maternal and fetal procedures, maternity and child nursing, and patient assessment (Endicott 1976). CNMs deliver babies, provide family planning education, and manage gynecological and obstetric care.
obstetric care and can substitute for obstetricians/gynecologists in prenatal and postnatal care. They are certified by the American College of Nurse-Midwives (ACNM) to provide care for normal expectant mothers. They refer abnormal or high-risk patients to obstetricians or jointly manage the care of such patients. There are approximately 45 ACNM accredited nurse-midwifery education programs in the United States (US Bureau of Labor Statistics 2007).

Midwifery has never assumed the central role in the management of pregnancies in the United States that it has in Europe (Wagner 1991). Physicians, mainly obstetricians, attend most deliveries in the United States, but some evidence indicates that, for low-risk pregnancies, CNMs are much less likely to use available technical tools to monitor or modify the course of labor. Patients of CNMs are less likely to be electronically monitored, have induced labor, or receive epidural anesthesia. These differences are associated with lower Caesarean section rates and less resource use, such as hospital stay, operating room costs, and use of anesthesia staff (Rosenblatt et al. 1997).

**Value of NPP Services**

Studies have confirmed the efficacy of NPPs as health care providers. NPs and PAs often render care equivalent in quality to that provided by physicians (Office of Technology Assessment 1986). Later studies also demonstrated that NPPs can provide both high-quality and cost-effective medical care (Hooker 2006; Garrard et al. 1990; Ostwald and Abanobi 1986) because they show greater personal interest in patients and cost significantly less (Sellards and Mills 1995). Moreover, NPs have been noted to have better communication and interviewing skills than physicians. These skills are considered particularly important in community and migrant health centers in assessing patients who are predominantly of minority origin and often have little education (Brody et al. 1976). CNMs are considered effective in providing access to obstetrical and prenatal services in rural and poor communities (Institute of Medicine 1985; Rosenbaum 1995). CNMs can manage routine pregnancies as competently as, if not better than, physicians (Office of Technology Assessment 1986). Patients cared for by CNMs have shorter waiting times for visits, have shorter hospitalizations, and are more likely to express satisfaction with their care.

Especially repetitive technical tasks, such as the use of flexible sigmoidoscopy to screen for colon cancer, can be performed effectively and less expensively by specially trained NPPs. NPPs can also manage quick turnover cases in emergency departments, when a patient’s life is not in jeopardy. In occupational medicine, such as preemployment physicals, drug testing, and evaluation of workers’ compensation cases, an NP can probably handle 80 to 90% of the tasks performed by physicians. Moreover, NPs and PAs cost about 40% of what physicians cost. Hence, utilization of NPPs adds value to the delivery of health care.

Among the issues that need to be resolved before NPPs can be used to their full potential are legal restrictions to practice, reimbursement policies, and relationships with physicians (Samuels and Shi 1993). The lack of autonomy to practice is a great legislative barrier facing midlevel providers. Most states require physician supervision as a condition for practice. In some states, midlevel providers lack prescriptive authority. NPPs also face reimbursement barriers. Reimbursement for their services is generally indirect; that is, payments are made to the physicians with whom they
Allied Health Professionals

The term *allied health* is used to loosely categorize several different types of professionals in many health-related technical areas. Among these professionals are technicians, assistants, therapists, and technologists. These professionals receive specialized training, and their clinical interventions complement the work of physicians and nurses. Certain professionals, however, are allowed to practice independently, depending on state law.

In the early part of the 20th century, the health care provider workforce consisted of physicians, nurses, pharmacists, and optometrists. As knowledge in health sciences expanded and medical care became more complex, physicians found it difficult to spend the necessary time with their patients. Time constraints, as well as the limitations in learning new skills, created a need to train other professionals who could serve as adjuncts to or as substitutes for physicians and nurses.

Section 701 of the Public Health Service Act defines an allied health professional as someone who has received a certificate; associate’s, bachelor’s, or master’s degree; doctoral level preparation; or post-baccalaureate training in a science related to health care and has responsibility for the delivery of health or related services. These services may include those associated with the identification, evaluation, and prevention of diseases and disorders, dietary and nutritional services, rehabilitation, or health system management. Further, these professionals are other than those who have received a degree in medicine, dentistry, veterinary medicine, optometry, podiatry, chiropractic, or pharmacy; a graduate degree in health administration; a degree in clinical psychology; or a degree equivalent to one of these.

Allied health professionals can be divided into two broad categories: technicians/assistants and therapists/technologists. The main allied health professions in the United States are listed in Exhibit 4–2. Formal requirements for these professionals range from certificates gained in postsecondary educational programs to postgraduate degrees for some professions.

Typically, technicians and assistants receive less than 2 years of postsecondary education. They require supervision from therapists or technologists to ensure that treatment plans are followed. Technicians and assistants include physical therapy assistants (PTAs), certified occupational therapy assistants (COTAs), medical laboratory technicians, radiologic technicians, and respiratory therapy technicians.

Technologists and therapists receive more advanced training. They evaluate patients, diagnose problems, and develop treatment plans. Many technologists and therapists have independent practices. For example, physical therapy is practiced in most US states without the requirement of a prescription or referral from a physician. Many states also allow occupational therapists and speech therapists to see patients without referral from a physician.

Therapists

*Physical therapists* (PTs) provide care for patients with movement dysfunction. Educational programs in physical therapy are accredited by the Commission on Accreditation of Physical Therapy Education. Of the
Health Services Professionals

Physical therapy programs are accredited. Master’s degree programs typically are 2 to 2.5 years in length, while doctoral degree programs last 3 years. To obtain a license, PTs must also pass the National Physical Therapy Examination (US Bureau of Labor Statistics 2011).

Occupational therapists (OTs) help people of all ages improve their ability to perform tasks in their daily living and working environments. They work with individuals who have conditions that are mentally, physically, developmentally, or emotionally disabling. A master’s degree in occupational therapy is the typical minimum requirement for entry into the field. In 2009, 150 master’s degree programs or combined bachelor’s and master’s degree programs were accredited, and 4 doctoral degree programs were accredited by the Accreditation Council for Occupational Therapy Education (US Bureau of Labor Statistics 2011).


Other Allied Health Professionals

Medical dietetics includes dietitians or nutritionists and dietetic technicians who ensure that institutional foods and diets are prepared in accordance with acceptable nutritional standards. Dietitians are registered by the Commission on Dietetic Registration of the American Dietetic Association. Dispensing opticians fit eyeglasses and contact lenses. They are certified by the American Board of Opticianry and the National...
Contact Lens Examiners. Social workers help patients and families cope with problems resulting from long-term illness, injury, and rehabilitation. The Council on Social Work Education accredits baccalaureate and master’s degree programs in social work in the United States.

Many programs are accredited by the Committee on Allied Health Education and Accreditation under the American Medical Association, including anesthesiologist assistants, cardiovascular technologists, cytotechnologists (study changes in body cells under a microscope), diagnostic medical sonographers (work with ultrasound diagnostic procedures), electrophysiologic technologists (work with procedures related to the electrical activity of the brain and nervous system), emergency medical technician–paramedics (provide medical emergent care to acutely ill or injured persons in prehospital settings), histologic technicians/technologists (analyze blood, tissue, and fluids), medical assistants (perform a number of administrative and clinical duties in physicians’ offices), medical illustrators, medical laboratory technicians, medical record administrators (direct the medical records department), medical record technicians (organize and file medical records), medical technologists (perform clinical laboratory testing), nuclear medicine technologists (operate diagnostic imaging equipment and use radioactive drugs to assist in the diagnosis of illness), ophthalmic medical technicians, perfusionists (operate life support respiratory and circulatory equipment), radiologic technologists (perform diagnostic imaging exams, such as X-rays, computed tomography, magnetic resonance imaging, and mammography), respiratory therapists and technicians (treat patients with breathing disorders), specialists in blood bank technology, surgeon’s assistants, and surgical technologists (prepare operating rooms and patients for surgery).

Certain health care workers are not required to be licensed, and they usually learn their skills on the job; however, their roles are limited to assisting other professionals in the provision of services. Examples include dietetic assistants, who assist dietitians or dietetic technicians in the provision of nutritional care; electroencephalogram technologists or technicians, who operate electroencephalographs; electrocardiogram technicians, who operate electrocardiographs; paraoptometrics, including optometric technicians and assistants, who perform basic tasks related to vision care; health educators, who provide individuals and groups with facts on health, illness, and prevention; psychiatric/mental health technicians, who provide care to patients with mental illness or developmental disabilities; and sanitarians, who collect samples for laboratory analysis and inspect facilities for compliance with public health regulations. Increasingly, these practitioners seek their credentials through certifications, registrations, and training programs.

As the number of older people continues to grow and as new developments allow for the treatment of more medical conditions, more allied health professionals will be needed. For example, home health aides will be needed as more individuals seek care outside of traditional institutional settings. Jobs for LPNs, LVNs, and pharmacy technicians are also expected to increase by a substantial number, roughly 155,600 and 99,800, respectively (US Bureau of Labor Statistics 2009).

In an effort to meet the growing demand for allied health professionals, the Patient Protection and Affordable Care Act (ACA)
of 2010 has provisions for the forgiveness of existing education loans. The program includes allied health professionals who are employed full-time in a federal, state, local, or tribal public health agency or other qualified employment location, including acute care and ambulatory care facilities, settings located in Health Professional Shortage Areas (HPSAs), or medically underserved areas (Redhead and Williams 2010).

Health Services Administrators

Health services administrators are employed at the top, middle, and entry levels of various types of organizations that deliver health services. Top-level administrators provide leadership and strategic direction, work closely with the governing boards (see Chapter 8), and are responsible for an organization’s long-term success. They are responsible for operational, clinical, and financial outcomes of their entire organization. Middle-level administrators may have leadership roles for major service centers, such as outpatient, surgical, and nursing services, or they may be departmental managers in charge of single departments, such as diagnostics, dietary, rehabilitation, social services, environmental services, or medical records. Their jobs involve major planning and coordinating functions, organizing human and physical resources, directing and supervising, operational and financial controls, and decision making. They often have direct responsibility for implementing changes, creating efficiencies, and developing new procedures with respect to changes in the health care delivery system. Entry-level administrators may function as assistants to middle-level managers. They may supervise a small number of operatives. For example, their main function may be to oversee and assist with operations critical to the efficient operation of a departmental unit.

Today’s medical centers and integrated delivery organizations are among the most complex organizations to manage. Leaders in health care delivery face some unique challenges, including changes in financing and payment structures, as well as having to work with reduced levels of reimbursement. Other challenges include pressures to provide uncompensated care, greater responsibility for quality, accountability for community health, separate contingencies imposed by public and private payers, uncertainties created by new policy developments, changing configurations in the competitive environment, and maintaining the integrity of an organization through the highest level of ethical standards.

Health services administration is taught at the bachelor’s and master’s level in a variety of settings, and the programs lead to several different degrees. The settings for such academic programs include schools of medicine, public health, public administration, business administration, and allied health sciences. Bachelor’s degrees prepare students for entry-level positions. Mid- and senior-level positions require a graduate degree. The most common degrees are the Master of Health Administration (MHA) or Master of Health Services Administration (MHSA), Master of Business Administration (MBA, with a health care management emphasis), Master of Public Health (MPH), or Master of Public Administration (or Affairs; MPA) (Pew Health Professions Commission 1993). The schools of public health that are accredited by the Council on Education for Public Health (CEPH) play a key
role in training health services administrators in their MHA (or MHSA) and MPH programs (CEPH 2011). The MHA programs, however, compared to the MPH programs, have more course requirements to furnish skills in business management (both theory and applied management) and quantitative/analytical areas, considered crucial for managing today’s health services organizations. This disparity has been viewed as a concern that the schools of public health need to address (Singh et al. 1996).

Educational preparation of nursing home administrators is a notable exception to the MHA model. The training of nursing home administrators has largely been influenced by government licensing regulations. Even though licensure of nursing home administrators dates back to the mid-1960s, regulations favoring a formal postsecondary academic degree are more recent. Passing a national examination administered by the National Association of Boards of Examiners of Long-Term Care Administrators (NAB) is a standard requirement; however, educational qualifications needed to obtain a license vary significantly from one state to another. Although about one-third of the states still require less than a bachelor’s degree as the minimum academic preparation, an increasing number of practicing nursing home administrators have at least a bachelor’s degree. The problem is that most state regulations call for only general levels of education rather than specialized preparation in long-term care administration. General education does not furnish adequate skills in all the domains of practice relevant to nursing home management (Singh et al. 1997). However, various colleges and universities offer specialized programs in nursing home administration.

Health services professionals in the United States constitute the largest labor force. The development of these professionals is influenced by demographic trends, advances in research and technology, disease and illness trends, and the changing environment of health care financing and delivery. Physicians play a leading role in the delivery of health services. The United States has an overall surplus of physicians and a maldistribution of physicians both by specialty and by geography. The current shortage of PCPs is likely to continue well into the future. Various policies and programs have been used or proposed to address both physician imbalance and maldistribution, including regulation of health care professions, reimbursement initiatives targeting suitable incentives, targeted programs for underserved areas, changes in medical school curricula, changes in the financing of medical training, and a more rational referral system.

In addition to physicians, many other health services professionals contribute significantly to the delivery of health care, including nurses, dentists, pharmacists, optometrists, psychologists, podiatrists, chiropractors, NPPs, and other allied health professionals. These professionals require different levels of education rather than specialized preparation in long-term care administration. General education does not furnish adequate skills in all the domains of practice relevant to nursing home management (Singh et al. 1997). However, various colleges and universities offer specialized programs in nursing home administration.
Test Your Understanding

Terminology

advanced practice nurse  
allied health  
allopathic medicine  
certified nurse midwives  
chiropractors  
comorbidity  
dental assistants  
dental hygienists  
dentists  
generalist  
hospitalist  
licensed practical nurses  
maladjustment  
nonphysician practitioners  
nurse practitioners  
occupational therapists  
ophtalmologists  
osteopathic medicine  
pharmaceutical care  
physicians  
physical therapists  
physician assistants  
physician extenders  
podiatrists  
primary care  
psychologists  
registered nurses  
residency  
specialist  
specialty care

Review Questions

1. Describe the major types of health services professionals (physicians, nurses, dentists, pharmacists, physician assistants, nurse practitioners, certified nurse midwives), including their roles, training, practice requirements, and practice settings.

2. What factors are associated with the development of health services professionals in the United States?

3. What are the major distinctions between primary care and specialty care?

4. Why is there a geographic maladjustment of the physician labor force in the United States?

5. Why is there an imbalance between primary care and specialty care in the United States?

6. What measures have been or can be employed to overcome problems related to physician maladjustment and imbalance?

7. Who are nonphysician primary care providers? What are their roles in the delivery of health care?

8. In general, who are allied health professionals? What role do they play in the delivery of health services?

9. Provide a brief description of the roles and responsibilities of health services administrators.
Appendix 4–A

List of Professional Associations

American Academy of Nurse Practitioners
American Academy of Physician Assistants
American Art Therapy Association, Inc.
American Association for Practical Nurse Education and Service
American Association for Rehabilitation Therapy
American Association for Respiratory Care
American Association of Colleges of Nursing
American Association of Colleges of Osteopathic Medicine
American Association of Colleges of Pharmacy
American Association of Dental Schools
American Association of Homes and Services for the Aging
American Association of Medical Assistants
American Chiropractic Association
American College of Emergency Physicians
American College of Health Care Administrators
American College of Healthcare Executives
American College of Nurse Midwives
American Corrective Therapy Association
American Council on Pharmaceutical Education
American Dance Therapy Association
American Dental Assistants Association
American Dental Association
American Dental Association SELECT Program
American Dental Hygienists’ Association
American Dietetic Association
American Health Care Association
American Hospital Association
American Medical Association
American Medical Technologists
American Nurses’ Association
American Occupational Therapy Association
American Optometry Association
American Organization of Nurse Executives
American Osteopathic Association
American Pharmaceutical Association
American Physical Therapy Association
American Psychiatric Association
American Psychological Association
American Public Health Association
American Registry of Radiologic Technologists
American School Health Association
American Society of Clinical Pathologists
American Society of Hospital Pharmacists
American Society of Radiologic Technologists
American Speech-Language-Hearing Association
American Therapeutic Recreation Association
Association of American Medical Colleges
Association of Physician Assistant Programs
Association of Schools and Colleges of Optometry
Association of Schools of Public Health
Association of Surgical Technologists
| Association of University Programs in Health Administration |
| Council on Podiatry Education |
| Council on Social Work Education |
| Dental Assisting National Board, Inc. |
| Environmental Management Association |
| Healthcare Financial Management Association |
| International Society for Clinical Laboratory Technology |
| National Academy of Opticianry |
| National Association for Music Therapy |
| National Association of Boards of Pharmacy |
| National Association of Chain Drug Stores, Inc. |
| National Association of Emergency Medical Technicians |
| National Association of Social Workers |
| National Board for Respiratory Care, Inc. |
| National Board of Podiatry |
| National Certification Agency for Medical Laboratory Personnel |
| National Commission for Health Certifying Agencies |
| National Council for Therapeutic Recreational Certification |
| National Council for Therapy and Rehabilitation through Horticulture |
| National Environmental Health Association |
| National League for Nursing |
| National Nursing Centers’ Consortium |
| National Registry of Emergency Medical Technicians |
| National Society of Cardiovascular Technology |
| National Society of Pulmonary Technology |
| National Therapeutic Recreation Association |
| Opticians’ Association of America |
| Society of Nuclear Medicine |


