

INTRODUCTION TO THE

Health Professions

FOURTH EDITION

PEGGY S. STANFIELD • Y.H. HUI



INTRODUCTION
to the
HEALTH
PROFESSIONS



INTRODUCTION
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HEALTH
PROFESSIONS
Fourth Edition



Peggy S. Stanfield, MS, RD/LD, CNS

*Dietetic Resources
Twin Falls, Idaho*

Y. H. Hui, PhD

*Science and Technology System
West Sacramento, California*



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*This fourth edition of
Introduction to the Health Professions is dedicated
with appreciation and gratitude to many, but especially to:*

*The great teachers who channel their energies
into preparing students for health careers.
We salute you.*

*Those dedicated and caring students who
have chosen careers of service to humanity
and are sharing their talents with others.
We wish you great success.*

*Our dear friend, Jim Keating,
who many years ago started our writing careers,
and continues to support and encourage our endeavors.
Much love to you, Jim.*

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have given help and support in so many ways.
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Preface

Thanks to you, the teachers, the number of students using this book has continued to increase. We therefore have an obligation to make sure that this fourth edition reflects the needs of your courses and your students. The changes are divided into two categories.

The first category affects the chapters in Part One, The Health Care System in the United States. They include the following:

1. An update on the continuing evolution of medicine, health problems, and health care moving into the twenty-first century.
 - New technologies, which bring concomitant challenges related to cost, availability, and lifespan
 - Lifestyle changes in areas such as hygiene, exercise, and drugs
 - Improved nutrition and food safety
 - Preventive measures and individual responsibility
 - Socioeconomic factors
 - Emerging and reemerging diseases
 - The status of women's health
2. Trends in financing of health care insurance coverage.
 - Recent congressional budget agreements and the implications for future health care (Balanced Budget Amendment)
 - Impact of deregulation
 - Updates on managed care organizations
 - Effect on hospitals and nonprofit institutions
 - Effect of the Patient's Bill of Rights

3. Updates on the status, job outlook, salaries, and future of health care practitioners.

The second category of changes affects the remainder of the book, reflecting the changes in each profession in the following areas:

1. Work description
2. Work environment
3. Employment opportunities
4. Educational and legal requirements
5. Employment trends
6. Earnings
7. Communication (including new Web sites)

The wealth of up-to-date, practical information that is contained in the four appendices is not available elsewhere:

- In Appendix A, the chart of the salary ranges for health professionals gives students a base for comparing current possibilities and predicting salary changes.
- In addition to the sources of information listed in the chapters in Parts Two and Three, Appendix B contains sources of career information and places to begin collecting job information.
- Appendix C offers guidance in pursuing desired jobs, including specific tips on locating jobs, being interviewed, and composing a résumé.
- Appendix D lists the references for citations in the chapters as well as additional suggested readings.

Our sources of information for each profession include the following:

- *Occupational Outlook (2001–2002)*, published by the U.S. Department of Labor. Just before press time, the 2002–2003 version was released. Because of time constraints we updated only the salary ranges.
- Organizations representing each profession

- Various documents obtained through the Internet
- Selected reports in current journals, magazines, and newspapers
- Literature from college catalogs
- Other professional literature

We hope that the teachers and students will find this fourth edition useful and that it will satisfy their needs for basic information about various health professions in this country. Please let us know your thoughts so we can serve you even better with a fifth edition.

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Acknowledgments

Many people are instrumental in bringing a book to fruition—every author is part of a well-organized team. We would like to express our sincere appreciation to the team that assisted in the preparation of this book, especially to the following members: Kris Ellis, Julie Bolduc, and Corinne Hudson. The dedication and professionalism you bring to your work are evident in the quality of the product. Your contributions are highly valued.

The contents of this text were largely obtained from government publications, most of which are authored anonymously. Although all such writings are in the public domain and can be reproduced as needed, we would like to thank all those workers whose labors were so useful. This book would have been most difficult to complete without their contributions.

Steve Poppino, Reference Librarian at the College of Southern Idaho in Twin Falls, lent his expert assistance to obtaining information for this fourth edition. It is very much appreciated. Thank you again, Steve.

We would especially like to thank Philip R. Lee and Carroll L. Estes (*The Nation's Health*, 6th ed., 2001, Jones and Bartlett Publishers) and Charlene Harrington and Carroll L. Estes (*Health Policy: Crisis and Reform in the U.S. Health Care Delivery System*, 3rd ed., 2001, Jones and Bartlett Publishers) for the use of their excellent texts in guiding our writing of this book regarding the salient points of current policies, factors affecting health care, and projections for health care of North Americans.

We acknowledge with appreciation the contributions of myriad groups of scientists, organizations, and others, whose combined efforts produced national health objectives for the next 10 years (*Healthy People 2010, vol. 1 and 2, Understanding and Improving Health*; Department of Health and Human Services, November

2000). It reflects the scientific advances of the past 20 years and provides insights into trends and opportunities for health improvement as well as concerns that must be addressed in the twenty-first century. The fact that this nation's population is growing older and more diverse demands that health care providers, working with political bodies, address these issues in order to eliminate the persistent disparities in health care.

INTRODUCTION
to the
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Part One



The Health Care System in the United States

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Chapter 1



U.S. Health Care, 1990–2001

Key Terms

Acute infectious disease

Chronic illness

World Health Organization
(WHO)

Prevention

Socioeconomic status (SES)

Effects of expanded technology

Objectives

After studying this chapter the student should be able to:

1. Discuss the changes in health problems of the population during this century.
2. Identify expected future changes in the health of the population that will influence the health care professional.
3. Name five new technology advances in the United States.
4. Identify the role of the government in the expansion of health care.

This fourth edition will differ in several respects from the first three editions because of the unfolding events stemming from the attacks on the World Trade Center in New York on September 11, 2001. This staggering and unbelievable event not only altered our personal lives, but also changed our priorities in ways that we could never have anticipated.

Prior to September 11, Congress, health professionals, and the public were aware that the health care system in the United States was flawed and there was urgent need for reform. There was general agreement that it must be overhauled, but no consensus could be reached as to how those reforms could be accomplished. The political climate was heated, and with a divided Congress, it remained a daunting task. Pending legislation has now been put on hold indefinitely as we enter the first war of the twenty-first century.

Protecting U.S. citizens against physical, biochemical, and nuclear attacks and supporting U.S. military forces is now the number one priority, and Congress is speaking with one voice. As we move to accomplish these priorities and defend against future attacks, health professionals will play a major role. New protocols are being developed and implemented across the nation.

The United States will have to confront the complex issues regarding health reform as soon as possible after we recover from the blow inflicted on our citizens and infrastructure. With that premise, we begin the first chapter with a look back at health care issues and protocols developed in the last decade of the twentieth century. Much of the material from the third edition is still relevant, as the projected changes stem from work done during 1990–2000. The succeeding chapters are updated to reflect the anticipated changes and demographics of the twenty-first century, and the changing nature of the health practitioner's career choices and practice.

A Look Back

Since the dawn of recorded history (and undoubtedly before), human beings have suffered sudden and devastating epidemics and diseases. In the United States in the second half of the nineteenth

century, the most critical health problems were related to contaminated food and water, inadequate housing, and sewage disposal. A countrywide cholera epidemic and a yellow fever epidemic killed more than 30,000 people between 1853 and 1858.

By 1900 infectious disease epidemics had been brought under control due to improving environmental conditions. Cities developed systems for safeguarding the milk, food, and water supply, and health departments began to grow, applying case findings and quarantines with good results. By 1900 the major epidemics that had caused deaths had been eliminated in the United States, and the pendulum swung away from *acute infectious diseases* and toward conditions of a personal nature that required treatment. Pneumonia, tuberculosis, heart disease, enteritis, diarrhea, and accidents were the major conditions requiring treatment in the 1900s.

The most important factor in the decline in mortality in the twentieth century was essential hygiene, supported by home and workplace improvements and attempts to improve the environment. Better hygiene accounts for approximately one-fifth of the reduction in mortality.

Another reason for the falling death rate was the improvement of nutrition, which led to an increase in the resistance to diseases. Lack of food and the resulting malnutrition were largely responsible for the predominance of infectious diseases. Nutritional status is a critical factor in a person's response to infectious diseases, especially young children. According to the *World Health Organization (WHO)*, the best "vaccine" against common diseases is an adequate diet.

With epidemics behind them, the scientific community began working on better surgical techniques, new treatment methods, new tests to facilitate accurate diagnoses, and treatment of individual diseases. The number of hospitals grew rapidly, and medical schools flourished.

Within a few years medical care and patterns of disease had totally changed. The arrival of antibiotics in the 1940s signaled the end of the dominance of acute infectious disease and the ascendancy of *chronic illnesses* such as heart disease, stroke, and cancer as the conditions that accounted for two-thirds of the deaths in this country. Other conditions that significantly function to affect the quality of life are arthritis, arteriosclerosis, and blindness.

Medicine must now confront the diseases and health problems that are in great degree a result of the influence of the environment.

In the 1990s, it became obvious that changed patterns of disease now threaten humanity. For example, the emergence of acquired immune deficiency syndrome (AIDS) in the 1980s, a combination of immune system defect, viral disease, and cancer, is one of the new chronic diseases challenging the medical community. At present, there is no cure in sight for this fatal disease and researchers predict that none will be available for at least a decade.

A Look Forward

Most diseases with which we are confronted today, both physical and mental, are associated with influences that can be controlled. The individual can take responsibility for most of them, such as drug use, exercise, excesses, eating habits, hygiene, and so forth. These measures are more important for health than those that depend on society's protection from hazards and provision of safe and essential foods.

For the future, the predominance of chronic illness as the major threat to health raises many issues. Chronic illnesses related to genetics, lifestyles, and the environment will require a reexamination of methods of intervention. It is generally accepted that the appearance of symptoms of a chronic disease indicates that it began long before the symptoms were apparent. This fact changes the approach to the planning and financing of health care. Since the exact date of the onset of a chronic disease cannot be pinpointed, health care services must begin thinking about prevention as the major treatment. *Prevention*, which is related directly to major changes in lifestyle and personal habits, cannot be accomplished on a short-term basis. Many habits that accompany disease, such as heavy smoking, overeating, and excessive stress, are a part of individuals' values and behavior patterns and cannot be changed with one-time activities, technology, or lectures.

The role of individual medical care in preventing sickness and premature death is secondary to that of other influences, yet society's investment in health care is based on the premise that it is the major role.

The public believes health depends primarily on intervention by the doctor and early discovery of disease, when in fact health is determined mainly by the lifestyles people choose to follow.

Optimal treatment for chronic illness requires health care that is long-term and continuous—at present, health care in the United States is primarily short-term and discontinuous. A major reason for this is the funding of health care. Although behavioral and environmental influences are the greatest contributors to health, surgery and drugs are regarded as the core of health care. While health insurance pays for treatments for acute diseases and hospitalization, the current method of financing health services emphasizes payment for individual services, which reinforces the concept of short-term, discontinuous service. What is needed in health care is an adjustment in the distribution of resources among prevention of disease, care of the sick who require treatment, and care of the sick who do not need active intervention.

It appears that disease patterns of the population will undergo other changes, creating new conditions that will require further alterations in service and interventions. Next, we consider the *effects of expanded technology* in the health care field.

Today, organ transplants, laser beam surgery, gene splicing, magnetic resonance imaging (MRI), and computerized axial tomography (CAT) are commonplace procedures. The continuing surge of technological advances is not without problems. Evaluation of new discoveries and techniques has fallen far behind the actual technology. Excessive cost is another factor, one that affects the financial structure of the entire health care system. Salaries for the highly specialized personnel who use the often costly equipment and interpret results can be overwhelming. These increased costs are visible in the form of higher health insurance costs, higher cost for hospital stays, government payments to the system, and total medical bills. This excessive technology has not only increased medical costs, but also created a social and ethical problem. Because of limits in funding, it cannot be provided to all people. The poor, who may need it desperately, have no access to it.

The incredible growth of technology has affected all the health professions. Students entering the health field today recognize that they must excel academically and master technical roles. Less time is spent in learning personal, nontechnical aspects of care. This value system is reinforced not only by the professionals' peers and administrators but by the public as well. Excellent technical performance has become a standard, at the cost of the personal, human touch.

The federal government plays an increasingly powerful role in the direction of health care. It dominates the health care system by virtue of its expanding monetary support of technology and services, and it sets the rules for the provision of health care.

As health services enter the twenty-first century, it becomes apparent that the social philosophy of the twentieth century is obsolete and that it is moving toward a philosophy that holds that society, through the government, must take responsibility for organizing and maintaining adequate health care for all the people. Where once health care was considered an individual matter, it is now assumed that health care is a right to which everyone should have access.

In the next chapter the categories of health services now provided and maintained by public and private funding are explored. Since there is no single “U.S. Health Care System,” the many ways in which health care is delivered can be puzzling. This should not be surprising, given the historical perspective of health services, the diverse subsystems in operation in the United States, and the dynamics of social and technological changes.

Summary

Health Trends in the 1990s

1. Leading causes of death in the twentieth century were heart disease, cancer, cerebrovascular accidents (CVA), accidents, chronic obstructive pulmonary disease (COPD), pneumonia and flu, diabetes, suicide, chronic liver disease, and human immunodeficiency virus (HIV) infection and AIDS.
2. Mortality rates in twentieth century show a remarkable change: Death rates from infectious diseases declined significantly, but deaths from stroke and heart disease rose to epidemic proportions in the first half of the century. From 1950 to present, they declined dramatically. There was also decline in lung and stomach cancer, infectious diseases such as tuberculosis and smallpox, and infant and maternal mortality, presumably due to less contact with microorganisms.

3. By 1995, life expectancy was at the highest level ever. The decline in death rates was especially notable among the young and old. The decrease in death rates among the elderly is significant. These declines were presumably due to collaboration between medicine and public health in efforts to educate the public, especially about lifestyle changes, including personal hygiene, vaccinations, and social and environmental changes. AIDS and tobacco were especially targeted.
4. Approximately one-half of all deaths in the United States in 1990 occurred in people younger than age 75.
5. Fifty percent of the causes of death (now) are behavioral: diet and activity patterns, toxic agents, microbial agents, tobacco, alcohol, firearms, motor vehicles, and illicit use of drugs.
6. Role of *socioeconomic status* (SES) and health: poverty, welfare, homelessness, lack of education, race, ethnicity, social class, lack of access to care, and women issues.
7. Regarding homelessness: substance abuse problems, lack of education, people who have been incarcerated, long-term welfare recipients, unemployment, trauma, mental illness.
8. The most prevalent mental disorders are clinical depression and anxiety disorders. The price tag for mental disorders in 1990 was \$148 billion, but escalated in 2000.

Some Health Strategies for the Twenty-First Century

1. The mid- to late 1990s were a time of prosperity and declining unemployment in the United States, but many inequalities in income and wealth that affect health also existed. In the twenty-first century, strategies to improve health across the board include the following: (1) create alliances across political boundaries/partnerships; (2) improve data sources to monitor the health of the patient population; (3) create task forces to monitor, report, and design interventions to address SES differences in health; and (4) reduce health disparities between rich and poor.

2. *Healthy People 2010* (U.S. Department of Health and Human Services, Nov. 2000, Jones and Bartlett Publishers) has set out objectives to address the issues of the twenty-first century: (1) implement advances in preventive therapies, vaccines, drugs, assistive technologies, and computerized systems; (2) change how medicine is practiced; (3) broaden prevention and the science base. These broad approaches should increase the *healthy* lifespan and afford health protection, promotion, and prevention.

These objectives will affect all health professionals in every career and will change the practice of medicine as we know it.

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Chapter 2



Categories of Health Services

Key Terms

Department of Health and Human Services (DHHS)	Preferred provider organization (PPO)
Public Health Service (PHS)	Medicare and Medicaid
Health promotion and illness prevention services	Diagnosis related groups (DRGs)
Diagnosis and treatment	Informed consent
Rehabilitation	Health teams
Health care facilities	Public hospital
Managed care organization (MCO)	Proprietary hospital
Health maintenance organization (HMO)	Ambulatory care
	Mental health services

Objectives

After studying this chapter the student should be able to:

1. Describe the health care functions of private and public facilities, inpatient and outpatient services, military facilities, and volunteer facilities.
2. Explain how health care systems are financed.
3. Identify the four major types of health services and their functions.
4. Compare the functions of the two major providers of managed care.
5. Explain the concept of diagnosis related groups.
6. Name the major points of the Patient's Bill of Rights.
7. Describe public health, hospital, ambulatory, and mental health services.

Overview of the U.S. Health Care System

The U.S. health care system is extremely varied. The individual health care units, which at times overlap, serve a variety of people based on their economic and social status. Individuals and families receive and buy health care services based on what they perceive to be their immediate needs. Delivery of health care is presently directed by physicians in private practice. The health care system is primarily financed by personal, nongovernment funds or is paid directly by consumers through private health insurance plans. Public health services are provided by local and state governments.

The federal government provides very few direct health services, preferring to develop new, improved services by furnishing money to buy the developments it wants to see expanded. With minor exceptions, the federal government has no authority to provide direct services—this is a function of the private sector and the states. The federal government is involved, however, in financing research and individual health care for the elderly and indigent (via Medicare and Medicaid).

Congress plays a key role in this federal activity by making laws, allocating funds, and doing investigative work through committees. The most important federal agency concerned with health affairs is the *Department of Health and Human Services (DHHS)*. The principal unit within this department is the *Public Health Service (PHS)*, which has five units within its domain: National Institutes of Health (NIH); Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA); Food and Drug Administration (FDA); Centers for Disease Control and Prevention (CDC); and Health Resources and Services Administration (HRSA). The PHS is described more fully later in this chapter.

A wide variety of health care facilities is available. These facilities, the places where persons involved in the health care industry work, are broadly summarized in this chapter and are individually detailed in succeeding chapters. This discussion of the numerous health care fields should assist students in selecting a career and becoming knowledgeable about their chosen fields.

The health care industry is a complex of remedial, therapeutic, and preventive services. These services are provided by hospitals,

clinics, government and volunteer agencies, health care professionals, pharmaceutical and medical equipment manufacturers, and private insurance companies. The health care system offers four broad types of services: health promotion, disease prevention, diagnosis and treatment, and rehabilitation.

Health promotion services are designed to help clients reduce the risk of illness, maintain optimal function, and follow healthy lifestyles. These services are provided in a variety of ways and settings. Examples include hospitals that offer consumers prenatal nutrition classes and local health departments that offer selected recipients prenatal nutrition classes plus the foods that satisfy their requirements (the Women, Infants, and Children [WIC] program). Classes at both places promote the general health of women and children. Exercise and aerobic classes offered by city recreation departments, adult education programs, and private or nonprofit gymnasiums encourage consumers to exercise and maintain cardiovascular fitness, thus promoting better health through lifestyle changes.

Illness prevention services offer a wide variety of assistance and activities. Educational efforts aimed at involving consumers in their own care include attention to and recognition of risk factors, environmental changes to reduce the threat of illness, occupational safety measures, and public health education programs and legislation. It is evident that preventive measures such as these can reduce the overall costs of health care.

Traditionally the *diagnosis and treatment* of illness have been the most used of the health care services. Usually people waited until they were ill to seek medical attention. However, recent advances in technology and early diagnosis techniques have greatly improved the diagnosis and treatment capacity of the health care delivery system—but the advances have also increased the complexity and price of health care.

Rehabilitation involves the restoration of a person to normal or near normal function after a physical or mental illness, including chemical addiction. These programs take place in many settings: homes, community centers, rehabilitation institutions, hospitals, outpatient settings, and extended care facilities. Rehabilitation is a long process, and both the client and family require extra assistance in adjusting to a chronic disability.

Health Care Facilities

Expansion of the health care system and professional specialization have resulted in an increase in the range and types of health care settings. A wide variety of *health care facilities* is now available. The range includes inpatient, outpatient, community-based, voluntary, institutional, governmental, hospice, and comprehensive health maintenance agencies.

Clients not requiring hospitalization can find health care in physicians' offices, ambulatory care centers, and outpatient clinics. Although physicians in office practice focus mainly on diagnosis and treatment of specific diseases, many clinics and ambulatory centers offer health education and rehabilitation as well.

Community-based agencies provide health care to people within their defined neighborhoods. Such diverse facilities as day care centers, home health agencies, crisis intervention and drug rehabilitation centers, halfway houses, and various support groups all work in a wide variety of ways to maintain the integrity of the community.

Institutions that provide *inpatient* (persons admitted to a facility for diagnosis, treatment, or rehabilitation) services include hospitals, nursing homes, extended care facilities, and rehabilitation centers. Hospitals are the major agency in the health care system. They vary greatly in size, depending on location. A rural hospital may have two dozen beds; a hospital in a large city may have more than a thousand.

Hospitals are either private or public. A private hospital is owned and operated by groups such as churches, businesses, corporations, and physicians. Such a facility is operated in such a way as to make a profit for the owners. A public hospital is financed and operated by a government agency, either at the local or national level. Such facilities are termed *nonprofit* facilities, and they admit many clients who cannot afford to pay for medical care. Clients in private hospitals have insurance, private funds, or medical assistance to pay for their care. Voluntary hospitals are usually nonprofit and often are owned and operated by religious groups. Community hospitals are independent, nonprofit corporations consisting of local citizens interested in providing hospital care for their community.

Each branch of the military operates and owns hospitals that provide care and treatment for military personnel and their fami-

lies. Every state operates hospitals that provide long-term care (if necessary) for treatment of the mentally ill or retarded. These state hospitals are run by state administrative agencies. At the local level, district hospitals are supported by taxes from those who live in the district. These hospitals are not involved with the governments of cities, states, or counties. County hospitals are run by counties that provide services for the poor and private patients. City hospitals are usually controlled by municipal and county governments. Many city hospitals provide care primarily for the poor.

Health care professionals working in such a wide variety of facilities find challenges and diversity that require them to become knowledgeable in specialized areas and to expand their range of services.

The health care professional who prefers research may choose to work in primary research institutions such as the NIH and agencies that administer health and welfare programs. Two major agencies are the Veterans Administration Hospitals and the Public Health Service. If you choose to practice in Canada, the Canada Health Care System covers medical care for all residents of Canada.

Managed Care

Managed care organizations (MCOs) were the health insurers of choice in 2000. They were divided primarily into *health maintenance organizations (HMOs)* and *preferred provider organizations (PPOs)*.

Some of the most prominent HMOs included Kaiser Permanente in California, Group Health Association in Washington, D.C., and the Medical Care Group of Washington University in St. Louis. An HMO provides basic and supplemental health maintenance and treatment services to enrollees who pay a fixed fee. The range of health services delivered depends on the voluntary contractual agreement between the enrollee and the plan.

The focus of HMOs is health maintenance, and these agencies employ a large number of health care professionals. People belonging to an HMO must use the agency's designated facilities instead of choosing their own, but the services rendered are all prepaid. The consumer's cost is generally less than in other facilities.

PPOs are another option open to the consumer for the delivery of health care. PPOs comprise groups of physicians or a hospital that provides companies with comprehensive health services at a discount. They employ paraprofessionals as needed.

MCOs, which were showing robust growth in the early and middle 1990s, experienced a sudden decline in profits in the late 1990s. By 1997, all were showing millions of dollars in losses, with more losses predicted in the coming years.

The reasons for the losses are varied, but the most prevalent ones included the following:

1. The 1990s saw many privately insured employees changing from fee-for-service plans to HMOs, a one-time shift that could save them 10 to 15 percent on their premiums. By late 1990 the majority of employees had made their transition to HMOs and the large gains in enrollment were over.
2. Physicians started to organize to improve their bargaining power with the MCOs. Consumer groups began lobbying their political representatives in Congress and state legislatures to pass consumer protection laws that would provide more choices. These movements also reduced managed care profits.
3. The Balanced Budget Act of 1997 reduced payments to providers, hospitals, and doctors.

The Consumer and Health Care

As discussed in Chapter 1, U.S. society has come to believe that all people have a right to health care regardless of ethnic, social, or economic background. This belief in the 1940s led to the enactment of the *Medicare* and *Medicaid* programs. These programs, with revisions, continue to provide health care for those who cannot afford it, generally the poor and the elderly. However, with escalating medical costs, payments for services have become *prospective*, which means that the rates for reimbursement to health care providers are standardized under federal guidelines. The rates are determined on the basis of 492 *diagnosis related*

groups (DRGs). This policy has advantages and disadvantages. On one hand, if Medicare costs are kept from unreasonable increases, the client may be protected in the right to health care. On the other hand, since an agency is reimbursed only a set amount, regardless of its actual costs, the client's right to health care may be threatened because the facility will be reluctant to provide more expensive tests and procedures and in some cases may not accept the client at all.

The Consumer's Rights

In 1973 the American Hospital Association developed a Patient's Bill of Rights, which lists 12 specific rights of hospitalized patients. This bill, while not a legally binding document, states the responsibilities of the hospital and staff toward the client and his or her family. The major tenets are that the client has the right to:

- Receive information pertaining to diagnosis and treatment
- Receive information on fees for services rendered
- Receive continuity of care
- Refuse diagnosis and treatment procedures
- Enjoy privacy and confidentiality from staff and physicians
- Seek a second opinion
- Change physicians and/or facilities if unsatisfied

One of the patient's most important legal rights is *informed consent*; that is, the physician must obtain permission from the client to perform certain actions or procedures. Informed consent must be obtained before beginning any invasive procedure, administering an experimental drug, or entering the client into any research project. Specific criteria must be adhered to for informed consent to be valid. Important factors are that the client must be rational and competent, or represented by someone who is; and the document must be written in language the client can understand, must delineate all the risks involved, must state that participation is voluntary, and must list the benefits of the procedure and

alternatives to the procedure. The client's right to informed consent affects how the health care system delivers care. It usually results in increased costs from extra paperwork and other work, but it is necessary for the consumer's protection (and may reduce a care provider's vulnerability to malpractice suits).

In early 1997, President Bill Clinton appointed an Advisory Commission on consumer protection and quality in the health care industry that further refined the Patient's Bill of Rights. Its five care provisions were:

- The right to treatment information
- The right to privacy and dignity
- The right to refuse treatment
- The right to emergency care
- The right to an advocate

Each of these rights contains additional provisions to help the consumer understand their meaning and obtain the best care.

The concept of health teams in all types of health services has brought about changes in health care delivery. The health team consists of a variety of health personnel, each with a specialized function. The membership of the health team varies in accordance with the needs of the client and his or her family.

There are two general types of health teams, functional and patient-centered. Both depend on the kind of problem to be solved and may dissolve at any given point and regroup to meet special problems. *Functional teams* are formed to take care of specific problems. Examples include the mental health team or the coronary care team. *Patient-centered teams* are formed according to closeness of patient contact. Patient-centered team members are usually doctors, nurses, dietitians, therapists, and other direct care providers.

Medical technologists, radiologic technologists, and pathologists may form a back-up medical care team for the patient. They are not in close contact with the patient, but deal with parts of the patient's service, such as his or her x rays, blood samples, and cultures.

At the outside edge of the interrelated teams are the people who concentrate on the delivery, the costs, the quality, and the availability of services. This health care team is composed of public health agents, hospital administrators, health educators, sanitarians, and others.

People working in the health professions must accept the changing nature of the teams and recognize that the combined skills of many professionals contribute to modern health care.

Health Care Costs

Some major problems plague the health care system in the United States. First, the cost of health care is exorbitant and continues to rise. Health insurance premiums are increasing and may approach double-digit increases in the near future. Many HMOs will undoubtedly go bankrupt, jeopardizing the health insurance coverage of millions of middle-class citizens. More hospitals, more doctors (80 percent of whom are specialists), more growth in medical science and health care technology, greatly expanded research, and expanded insurance coverage have contributed to this phenomenal rise in costs. Second, health care is fragmented. Patients no longer see a family physician with whom they are familiar, but, rather, a battery of specialists. This fragmentation is confusing and worrisome for the average consumer. Third, the many technological changes taking place can quickly outdate the knowledge and skills of the health practitioner. Fourth, the elderly population is expanding rapidly, increasing the need for special care and technology for this group. Services provided to the poor and the elderly are inadequate. Last, there is an uneven distribution of health services. Although rural areas and towns usually build small clinics or hospitals, the number of rural health workers is low when compared to the number in cities.

There are currently 43 million uninsured persons and more than 30 million underinsured individuals in the United States. The 1996 welfare legislation eliminated additional millions. As the stock market goes into a serious decline, an even greater number of people will lose their coverage.

Managed care companies will not be able to contain the rising health costs. Because health care costs must be controlled, the government may have to provide essential coverage to the entire population. People who want more and better care will have to pay for it out of their own pockets through private insurance or employer benefits.

It is speculated that many employers and employees may separate employment from health care. The employer will just provide

increased wages or a supplementary health benefit. This trend will make the future of managed care even more uncertain. The financing of health care is discussed in Chapter 3.

Public Health Services

The threats to health change over time. As one set of diseases, epidemics, and conditions is brought under control or eliminated, it is replaced with different threats. The past focus of services, as previously discussed, was to prevent or mitigate the effects of acute infectious diseases such as smallpox, bubonic plague, typhoid fever, childhood diseases, and other highly lethal maladies. With the changes in living conditions in the twentieth century, these scourges have been replaced by degenerative, debilitating diseases such as chronic obstructive pulmonary disease (COPD), mental and emotional dysfunction, cancer, arthritis, strokes, and coronary heart disease (CHD). Practitioners in public health, including researchers, study the nature of new threats and organize public measures to combat them. Since the government is usually involved in the financing and policy-making procedures, the term *public health* has come to include research, assessment, and control measures.

Public health services deal primarily with four aspects of care: identifying diseases that cause health or debility; assessing the factors of cause and method of transmission; finding ways to control or cure diseases and methods to prevent spread; and educating the public to apply the findings effectively.

The public health system is strongly affected by the interactions of federal, state, and local governments. Great changes in the roles played by government agencies have occurred over time, with the most important one being the Social Security Act of 1935. This act established annual grants-in-aid from the federal government to the states, part of whose purpose was to fund full-time local health departments. These grants provided for maternal and child health services and extended the services of local public health departments according to the needs of their communities. They were matching-fund grants, in which the states match federal money on a dollar-for-dollar basis.

Six basic functions were established for the Public Health Service between 1935 and 1946, and with few revisions they remain the foundation for public health agencies:

- Vital statistics (the recording, reporting, and publication of births, deaths, and diseases)
- Communicable disease control (any disease, such as sexually transmitted disease, that is transmissible between humans)
- Sanitation of the food, milk, water supply, and public eating places
- Laboratory services
- Maternal and child health
- Health education

Services added since the basic functions were established have broadened the scope of the American Public Health Association (APHA) and have vested more power in it. The domain now includes such functions as licensing and accrediting health professionals and health facilities, setting standards for automobile safety devices, and supervising the quality of medical payment programs such as Medicaid. Three major goals are now being implemented:

- Expansion of services and treatment for poor children
- Health promotion, disease prevention, and health maintenance
- Mental health services, especially at the community level

The student desiring to go into public health must be aware of the political battles that are being waged over the structure of the system. New and changed roles for local, state, and federal public health agencies are apparent. The nation will continue to need public health services and leaders who keep abreast of new research and who have a grasp of modern health problems and what is known about solving them from both a preventive and curative standpoint. These persons will also need an understanding of the political system and societal expectations and demands. The student who chooses a public health service career will be in a role

that is changing in dynamics while still fulfilling fundamental, long-accepted functions.

Hospitals: Development and Services

The hospital is the key resource and center of the U.S. health care system. Hospitals not only deliver primary patient care but also train health personnel, conduct research, and disseminate information to consumers.

Since the turn of the century, hospitals have gradually become the professional heart of all medical practice. Accelerating technological advances and changing societal factors have thrust hospitals into the grasp of big business. They are the third-largest business in the United States. They employ approximately 75 percent of health care personnel, with a collective payroll that accounts for at least 40 percent of the nation's health expenditures. Approximately 60 percent of federal health monies and 40 percent of all state and local health monies go to hospitals.

Hospitals also account for the most pressing of today's health care system problems—namely, cost inflation. There is also widespread duplication of services, overemphasis on specialized services and diagnostic tests, and a detached manner of caring for the ill.

The major forces affecting the development of hospitals included the following: (1) advances in medical science, most notably discovery of antiseptic techniques and sterilization processes and the use of anesthesia; (2) advances in medical education, with predominant use of scientific theory and standardization of academic training for physicians; and (3) transformation of nursing into a profession by requiring training in caring for the wounded and ill, cleanliness and sanitation procedures, dietary instruction, and simple organized care. These effective, though simple, procedures were a great boon to hospital growth, as the public began to see hospitals as a safe, effective place to go when they were ill. The fourth major force was the development of specialized technology such as x rays, blood typing, and electrocardiograms, which all came into being early in the twentieth century.

Hospitals have not responded quickly to the health care needs of an aging population. In the late 1980s they finally began to go

into nontraditional (for hospitals) services such as outpatient care, home health care, extended care units, and rehabilitation. Their resources continue to be concentrated on acute care, short-term, curable, and special cases instead of the chronic, long-term illnesses that most often affect the elderly.

The growth of health insurance (which is discussed in Chapter 3) and of government's role in the hospital industry has had a substantial impact on hospitals. The federal government has financed hospital construction, regulated the type of construction, financed the provision of care, and set policy for the ways in which hospitals are operated. Since 54 percent of all hospital bills are paid by government programs, federal and state agencies are in a position to exert a great deal of control.

The complex hospital industry is usually categorized by three methods: function or type of service provided (from those treating a single disease such as cancer to those with multiple specialties, usually teaching hospitals); length of stay (many short-term, with seven days being the average length of stay, and fewer long-term, such as psychiatric or chronic disease hospitals, where the average stay is four to six months); and ownership or source of financial support—government (or public), proprietary (private for profit), or voluntary and religious (private nonprofit) ownership.

Public hospitals are owned by local, state, or federal agencies. Federally owned hospitals are generally reserved for the military, veterans, Native Americans, or other special groups. State government usually operates chronic long-term hospitals, such as mental institutions. Local government has city, county, or district hospitals that are primarily short-term and staffed by physicians who also have private practices. These types of hospitals in small cities and towns are generally small and function as community health care facilities. Public hospitals in major urban areas are large and are staffed by salaried physicians and resident physicians. They take care of the economically deprived and furnish all types of services—from drug abuse treatment to family planning.

Proprietary hospitals are operated for the financial benefit of the persons, partnerships, or corporations that own them. The present trend is toward a buyout of substantial numbers of these smaller hospitals by large investment firms, creating large, for-profit hospital systems. Management contracts are also on the rise, not only in for-profit hospitals but also in community hospitals. Both trends are expected to continue, as will adverse reaction to

them, especially in regard to management corporations taking over community-based hospitals. Philosophy, policies, and operation change drastically under management systems—sometimes for the better, at other times with dubious benefit. However, the proliferation of multisystem hospitals (corporation owned, leased, or managed) will probably persist. More than 50 percent of community hospitals are part of a corporate system and the mergers will continue in the twenty-first century.

Ambulatory Health Care Services

Care that is provided outside of institutional settings is considered *ambulatory care*, and is the most frequent contact that most people have with the health care system. Ambulatory care can be any type of care, from simple and routine to complex and specialized.

Probably the most familiar kind of ambulatory care, and the one that most people receive, is in an office of either a solo or group practice, or in a noninstitutional clinic. The type of service is primary or secondary care, and the principal health practitioners are physicians, dentists, nurses, technicians, therapists, and aides. In ambulatory surgical centers there are anesthesiologists as well. If the community can afford an emergency transportation and immediate care system, paramedics and emergency medical technicians are also part of the ambulatory care network. Emergency advice is furnished from community hot lines and poison control centers. Primary and secondary care is given at neighborhood health centers and migrant health centers. Community mental health centers are manned by psychologists and social workers. Home health services and school health services are staffed by nurses who give both primary and preventive care. Public health services, as discussed previously, include targeted programs such as family planning, immunizations, inspections, screening, maternal and child nutrition, and health care and health education. The health practitioners in these settings are physicians, nurses, dietitians, clinical assistants, and aides. The roster may also include environmental health specialists and sanitarians. Pharmacies are ambulatory care facilities staffed by registered pharmacists who dispense drugs and health education. Optical shops with

optometrists and opticians provide vision care, while medical technicians give specialized services in medical laboratories. The federal health system, previously detailed, furnishes all types of ambulatory care, as do prison services.

Many of the ambulatory care services evolve into large, highly complex organizations. For example, an executive committee may be elected to administer the operation. Designated group members may form a credentials committee to screen prospective members, or a building committee may be established. Large group practices usually have a medical director who is responsible for establishing policies regarding scope and quality of care, as well as personnel practices.

Hospitals are expanding their role to include ambulatory services. They have established fully staffed outpatient facilities and clinics. Hospital outpatient clinics include not only primary care but also specialties such as ophthalmology, neurology, and endocrine care. Teaching hospitals operate many specialty ambulatory clinics that expose medical students and house staff to more extensive experiences. Ambulatory surgery centers and emergency medical services have both been expanded, with emergency medicine becoming a specialty for physicians, and regional, hospital-based trauma centers have sprung up in many communities. Forces are at work within communities throughout the nation to enhance primary and specialized health care for all citizens.

Mental Health Services

Mental health facilities in the United States were developed in the nineteenth century (as was the American Psychiatric Association), but were little more than warehouses for large numbers of poor, homeless, and social misfits. They were state hospitals whose primary purpose, instead of treating the patient, was to protect the public from acutely crazy people. Creation of the National Institute of Mental Health (NIMH) in 1946 and the development of psychopharmaceuticals in the 1950s were the major breakthroughs that led to real treatment of mental illnesses. Psychotropic drugs enabled thousands of people to return to their communities and be

treated on an outpatient basis. Federal funding led to the building of many facilities, and the entire mental health system changed. The community mental health center network was conceived in the late 1960s and further strengthened during the 1970s. Unfortunately, however, this network is failing to care for the deinstitutionalized, many of whom are now homeless.

Although community centers have expanded greatly, they still require help from alternative sources of care such as hot lines, halfway houses, runaway shelters, and free clinics. These are generally funded privately and run by volunteers.

Mental health personnel involved in the delivery of *mental health services* include psychiatrists, who are M.D.'s with a specialty; psychologists, who are licensed by the state and hold a master's or doctoral degree but are not physicians; psychiatric nurses, who are academically trained and usually have advanced degrees in their specialty; and social workers, who may also hold advanced degrees in social work or human services. A number of allied health fields have developed in response to the growing needs of the community and the availability of funding. These include counselors and special education teachers, as well as many kinds of therapists.

With the exception of psychiatrists, mental health professionals have often been poorly received by their physical health colleagues and by the general public. Paraprofessional personnel such as psychiatric aides and mental health workers frequently encroach upon the duties of specialists in trying to broaden their own territories. Mental health services are part of the larger health care system but are still viewed as separate. Increasingly, however, medical, social, and behavioral experts are coming together to work with the whole person, not just mind or body. Community mental health centers function as interdisciplinary teams.

Many problems exist within the mental health system, including a society that clings to the concept of mental illness as a stigma. Adequate and appropriate treatment for mental illness is difficult at best; funding is low and payment is not easy to get from insurance, especially for long-term treatment. However, mental health centers continue to receive attention and more funding as they gain credence and respect within the larger health care systems.

Health Care in the Twenty-First Century

From its humble, unscientific, and often haphazard beginnings to the present multibillion-dollar industry, the U.S. health care system has undergone broad and often drastic changes. Its present visibility and highly technical orientation have led to thousands of jobs, created new professions, and provided care to millions of people. It is not without the attendant problems of a giant industry, however, and in the twenty-first century the system must face and solve yet more problems. Since health care costs are escalating out of control, the most pressing problem of this century will be to bring health care within the reach of everyone without sacrificing quality—a very large order indeed, and one not likely to go away. American ingenuity will face a difficult challenge in formulating a workable, affordable system for all the people.

Summary

The health status of the U.S. population has improved dramatically in the last 30 years. Improvements have been made in public health measures, socioeconomic status, and medical care (especially in preventive clinical services).

The Balanced Budget Act of 1997 set the directions for the twenty-first century. Some of the most pressing issues in health reform remain to be addressed, however:

- Containing mushrooming health care costs—the average cost per person now is \$3,300 per year out of pocket
- Providing health security for the middle class
- Providing coverage for the uninsured
- Mitigating the effects of health spending on the federal budget

Objectives for health care, as set forth in *Healthy People 2010*, are to:

1. Increase the quality and years of healthy life. Babies born in 1995 are expected to live an average of 75.8 years. *Healthy life*

is defined as full range of functional capacity at each stage of the life cycle from infancy to old age. The goals are to (1) increase life expectancy to 77.3 years; (2) increase the percentage of persons reporting good, very good, or excellent health to at least 90 percent; and (3) decrease the total death rate to no more than 459,000 per 1,000,000.

2. Eliminate health disparities through new or improved health policy.

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Chapter 3



Paying for Health Services

Key Terms

Fringe benefits	Reimbursement
Medical technology	Fee-for-service payment
Magnetic resonance imaging (MRI)	Capitation
Fiber optics	Managed care
Lasers	Health maintenance organization (HMO)
Distributive health care	Blue Cross/Blue Shield
National health insurance	Preferred provider organization (PPO)
Health care financing	Managed care organization (MCO)
American Medical Association (AMA)	Deregulation
Third-party payers	Devolution
Long-term care (LTC)	

Objectives

After studying this chapter the student should be able to:

1. Identify the major factors that have influenced health care financing.
2. Describe the factors that have affected national health insurance.
3. Explain the different methods of payment of (a) private insurance, (b) third-party payment, (c) Medicare, (d) Medicaid, (e) group insurance, (f) individual insurance, (g) managed care, and (h) fee-for-service payment.
4. Discuss ways insurance systems can be abused.

During the 1980s there was a radical change in the way health care was paid for. The term *managed care* came into common usage and remains a significant aspect of the present evolution. Four major factors changed health care: fear, a shift in the balance of power, an excess of doctors, and a shift in the health care setting.

Tax reductions in 1981 induced huge budget deficits, increasing the possibility that the Medicare trust fund would run out of money by 1990. Medicare's costs have always exceeded budgeted monies. *Fears that Medicare would go bankrupt* scared the government into invoking policies to bring health care costs under control. In 1983, after years of tinkering with Medicare, Congress passed a *prospective payment bill*, under which hospitals are paid a set amount for each patient in any of the established 492 known disease categories and diagnosis related groups (DRGs). This means that the government will not pay beyond the set fees for the identified type of illness, no matter how long the patient stays or what services he or she receives. As a result, Medicare hospital admissions have dropped and the lengths of stay are shorter, but Medicare payments continue to rise. In 1984 Congress began to regulate direct Medicare payments to physicians by a resource-based relative value scale for payment and established the Physician Payment Review Commission. In 1988 the Commission replaced the CPR (customary, prevailing, and reasonable) system with a fee schedule. In 1989 it was further limited by balance billing and annual expenditure. The fee schedule was implemented in 1992.

Another dramatic change that has radically altered health care is the *shift in the balance of power between unions and management*. The 1980s saw a weakening of union bargaining power and a high unemployment rate. These two factors enabled management to begin to decrease employee benefits. Prior to this time, *fringe benefits*, especially in the areas of health care, had been escalating with the same intensity as health care costs. Employees had come to expect more and more free health benefits with each ensuing contract. Now employers were able to restrain costs by requiring employees to pay higher deductibles and copayments. Many companies went to managed care health plans, which direct patients to the most cost-effective source of care.

It has been widely assumed that there is a shortage of doctors in the United States. The fact is that there is a *growing surplus of doctors*. The government directly intervened in medical education

more than 30 years ago to ensure that there would be enough physicians to keep up with the demands of Medicare. This was accomplished with grants, scholarships, low-interest or no-interest loans, and other encouragement, making access to a medical education easy for qualified individuals. The supply of doctors subsequently increased 57 percent from 1970 to 1990, while the population increased only 30 percent. This oversupply has led to competition, reorganization of medical practice, and advertising for clients.

Revolutionary advances in *medical technology* created a new dimension in health care delivery, taking medical services out of the hospital and into the community. Examples of recent advances are portable, mobile units for diagnosing almost every known disease without hospital admission—*magnetic resonance imaging (MRI)*, mammography, ultrasound, and other technological advances are available in doctors' offices and outpatient clinics and can even be taken into homes. Freestanding surgical centers and outpatient surgery are thriving, facilitated especially by advances made in *fiber optics* and *lasers*. These factors together have led to what is called *distributive health care*, which is changing the health care system as well as creating different ways of paying for health care. This chapter discusses the changing objectives of national health insurance, the content of some health insurance proposals, and who pays for health services.

American health insurance has slowly eroded over recent years, despite government attempts to plug the gaps through new programs such as Medicare + Choice, the Health Insurance Portability and Accountability Act (HIPAA), expansions of state Medicaid programs, and the \$24 billion children's health insurance program of 1997. Despite the efforts, the number of Americans without insurance has increased.

The most important trends that account for deterioration of health coverage are the following:

- Employers eliminating coverage because of escalating costs of premiums or shifting more costs to employees by choosing those plans with the highest out-of-pocket payments.
- Rising premium costs, both for those who buy insurance individually and for those who insure through an employer plan.

- The trend toward temporary and part-time work, which seldom includes health coverage. In 1997, about 29 percent of working Americans had jobs that were temporary, part-time, contract, or day labor, most of which offer no health coverage.
- No coverage for drugs. Pharmaceuticals represent the largest category of out-of-pocket expenses for the elderly.
- Limitations of care covered by HMOs.
- Rising costs of “Medigap” coverage for elderly, leading to substantial underinsurance.
- A crackdown on illegal immigrants and a reduction in services to legal immigrants.

As a result of these trends, lack of insurance and underinsurance are becoming widespread problems.

Changing Objectives of National Health Insurance

The costs of sickness include two principal components: the cost of lost earnings and the cost of medical care. The beginnings of *national health insurance* early in this century aimed at relieving the economic problems of illness. Income loss remains a concern, but concern has shifted during the twentieth century. Reformers shifted their attention, at the individual level, from lost earnings to medical costs as health insurance became more concerned with *health care financing* than with income maintenance.

Health insurance has become increasingly divorced from public health. Health insurance is now viewed as an instrument of institutional reorganization and cost containment. The enormous increases in the costs of medical care and the general changes in U.S. society have shifted the objectives of insurance away from those originally envisioned.

The health insurance business expanded steadily as it moved from the arena of economic to medical emphasis. The desirability of expanding medical services became a reality after World War II, when the federal government began subsidizing hospital construction and medical research. The principal goal of public policy then

was to expand medical resources rather than to correct distributional inequities. The government aided the spread of private insurance companies by excluding employers' contributions to health insurance from taxable income. The effect was to encourage employees to take wage increases in fringe benefits for health insurance instead of in cash. Private insurance companies, forbidden by antitrust laws from joining together to limit fees and rates, found it easier to raise their rates than to pursue cost control.

The long-range outcome of government policy and the expansion of the private insurance business was a system of health insurance that channeled a great proportion of national income into health care and in no way infringed on physicians' control of their work or prerogatives of setting their own prices. Medicare and Medicaid did not change this pattern. The government filled the gaps in the private insurance system and continued to accommodate physicians by not challenging their fee structures. Since physicians were paid based on their past charges and level of fees in their communities, doctors could push up rates to raise the reimbursement. Medicare also paid hospitals based on their costs, which did not encourage them to contain costs, since higher fees meant more reimbursement. Nursing homes were also allowed to figure depreciation and to increase their rates. The portion of the gross national product (GNP) attributable to health care increased from 5.9 percent to 9.1 percent between 1965 and 1979 because of the huge surge in medical, hospital, and nursing home costs during this period. By 1997 health care costs represented 14 percent of the GNP; by 2000 they increased to 18 percent of the GNP.

Not all the increase in medical costs after World War II could be attributed to the insurance system. General growth in technological development, public expectations, and public investment programs in research all contributed to this trend. Inflationary patterns in medical costs were evident in all industrial nations. An exception was Great Britain, where the medical budget is set at the national level and must compete with defense, education, and other government programs. This type of system was rejected, however, in the United States, partly due to the fear of "socialized medicine" but also due in large part to the bitter opposition of the *American Medical Association (AMA)* and privately practicing physicians, who believed a national system would take away their power and autonomy. A call for a national health plan as a means

to counteract the escalating cost of health resources, then, repeatedly died down due to lack of both political and popular support.

In the mid-1970s the United States entered a new stage in the history of health insurance. Prior to this time, the government had accepted the philosophy of increased investment in health care. The dispute that arose over the extent and control of insurance obscured the fact that fee-for-service payment was no longer appropriate or sufficient for managing medical expenses. As one of the four most inflationary sectors of the economy (energy, food, and housing being the top three), medical care logically became a target of antiinflation measures.

Attempts to slow the increasing costs of health care included industrywide wage and price controls initiated in 1971, followed by Medicare policies to slow price increases by doctors and hospitals and decrease the unnecessary use of hospital services. This led to the establishment of the Professional Standards Review Organizations.

Medical costs cause concern because of their magnitude and raise questions about their legitimacy. Studies reveal unnecessary surgery, duplication of technology, excess charges, and other discrepancies as major reasons for loss of confidence in the value of medical services.

The rising costs of medical care have also begun to disturb many powerful institutions, among them unions, corporations, and the federal government. All sides acknowledge the need for change. Today, health insurance programs seem to be more about cost containment and economic management than about efficiency and social equality.

Health Care Financing

The largest category of expenditures for health is for hospital care (40 percent). Physicians' services rank second in monies spent for health care, at about 20 percent of the total health service budget; 32 percent of the health dollar is divided among nursing homes, drugs, dentists, and personal care; and 8 percent is paid to miscellaneous health services.

Most of the financing for health care is paid through government programs and voluntary health insurance (generally referred

to as *third-party payers*). Citizens with private insurance have access to sophisticated medical resources and private physicians who are in charge of their care. However, private insurance premiums have escalated to the point that only those who are economically secure can afford it. Most employers now offer managed care options to their employees, and 52 percent of Medicare recipients are in HMOs. Patient care decisions about an illness are now determined by the organization to which they subscribe, and are primarily based on cost.

Consumers are increasingly complaining that their doctors are not in control of their care, and that companies are putting their bottom lines first. All managed care is not equal. There is a strong movement under way to regulate MCOs.

Health care expenditures fall unevenly on the population. If age 65 is considered the lower limit for the elderly segment of the population, then this group's expenditures are three times higher than the per capita expenditures for younger people.

There is a mismatch between acute and chronic care needs, and between the effects and effectiveness of various *long-term care* (LTC) policies, as the following example illustrates.

Women live an average of eight years longer than men, but are in poorer health. A majority of the over-65 age group are women, and they become a great majority in the 85-plus age group. While acute fatal diseases are prevalent among men, women have a high incidence of chronic conditions and higher rates of institutionalization.

Older women have lower incomes from every source. Three-fourths of the elderly who live in poverty are women. This gender difference affects access to health care; Medicare covers only one-third of their expenses. Their socioeconomic status, poverty, widowhood, and care giving are affected more by government changes, especially program cutbacks, than are the equivalent factors for men.

Medicare and Medicaid are disease insurance programs; they pay only for services and treatment of medically diagnosed conditions. Preventive services such as health screening and health promotion are not covered. Little research has been done in the area of rehabilitation, and few resources have been allocated to support higher levels of independence among care recipients.

The predominant method of physician *reimbursement* is *fee-for-service payment*. The biggest problem with fee-for-service is the definition of a service and what it includes. More services result in a higher income and can lead to abuse. *Capitation*, defined as pay-

ing the physician a fixed amount per person per unit of time without regard to the volume of services provided, is another mechanism for reimbursement. In capitation the insurance pays the physician a set fee to cover all the services; fee-for-service pays only for the particular service(s) rendered (itemized) at a given time. A third method is salary. Salary is used only in organizations where various other incentives are provided to the physician to enhance productivity.

Like physicians, hospitals can be reimbursed through several methods. First is reimbursement for specific services (same as fee-for-service). Second is the capitation method. The hospital may also be reimbursed on the basis of a day of care. Many hospitals average payments among patients instead of individualizing costs.

Health Insurance Coverage in the United States

An estimated 44.3 million people in the United States were without insurance coverage in 1998, up about 1 million from the previous year. There were great disparities seen between ethnic groups and within the general population.

- The Medicaid program insured 14 million poor, but 11.2 million poor still had no health insurance.
- The foreign-born population was more likely to be without health insurance than natives—34 percent compared to 14.4 percent in 1998. In addition, 53.3 percent of poor immigrants were without health insurance.
- In the general population 47.5 percent of poor full-time workers were uninsured in 1998.

The key factors influencing lack of insurance coverage were age, race, educational attainment, and work experience.

- People aged 18–24 years were more likely than other groups to lack coverage in 1998. The elderly, because of Medicare, are at the other extreme (1.1 percent without coverage).
- Hispanics had the highest rate of noncoverage.
- Among all adults the likelihood of being uninsured declines as education level increases.

- Part-time workers have a higher noncoverage rate than do full-time workers. Among poor workers about one-half were uninsured in 1998.

Findings concerning children:

- Children from ages 12 to 17 are less likely to be insured.
- Some 30 percent of Hispanic children were uninsured in 1998 (29.8 percent were insured by Medicaid).
- Approximately 38.8 percent of African American children were insured by Medicaid.
- Roughly 19 percent of Asian/Pacific Islander children were covered by Medicaid.

Medicare and Medicaid

The Medicare program is a federal insurance program for people aged 65 and older and certain disabled people. Patients on Medicare are entitled to the same benefits and care as those that private insurance pay for middle-income families. The main difference is that the government pays the hospital bills, instead of the individual or corporation. The Medicare program is run by the Health Care Financing Administration (HCFA) of the U.S. Department of Health and Human Services (USDHHS).

There are two parts to the Medicare program. Part A is hospital insurance and Part B is medical insurance. Part A has deductibles and coinsurance. In 2002 the patient must pay the first \$812.00 of the hospital bill. Medicare then pays only for the first 60 days of hospitalization, or 20 days of skilled nursing care. Beyond these lengths of stay, the patient is required to pay the total cost. Part B of Medicare requires a monthly premium, which was \$54.00 in 1996.¹ It carries a \$100.00 deductible and the patient must pay 20 percent of the approved amount and limited charges above that amount. "Approved amount" does not mean that Medicare will pay what the doctor or facility charges. This refers to the DRGs upon which Medicare bases its payments.

¹ AARP Bulletin, December 2001, Volume 42, 11, Washington, D.C.

Third-party and out-of-pocket payments, which include payments for premiums, deductibles, uncovered services, and coinsurance (supplemental insurance), lower the elderly's standard of living. They spend an average of 4.3 months (18 percent) of their annual income for medical care. Medicare + Choice programs offer a wide range of options if the employer joins the federal programs. The beneficiaries can establish a medical savings account, make private arrangements with their own physicians, or receive coverage from a PPO. For the poor, who are unable to pay their part of these charges, Medicaid is available.

Medicaid is the federal–state cooperative health insurance plan for the indigent. People who have incomes below the poverty level established by a state can use this government-sponsored health insurance program. Many private facilities and physicians do not accept these patients because of low reimbursement, a conflicting system of payment, or denial of payment for services already rendered.

Although Medicaid insurance can be difficult to access, it has assisted in helping poor patients get into skilled nursing facilities. Approximately 60 percent of patients' bills paid to private nursing homes are paid by the Medicaid program. Women and children account for 30 percent of the total Medicaid outlays; the remainder are elderly, chronically ill, or disabled. Many for-profit MCOs have decided not to bid for these accounts or have dropped out of their contracts because they cannot make a profit. The financial situation for both programs is shaky, although Medicare is expected to survive in some form when health care reform bills are enacted. Medicaid will undoubtedly be taken into the larger universal coverage that is being proposed.

Managed Care: HMOs and PPOs

The term *managed care* means a system in which employers and health insurers channel patients to the most cost-effective site of care. An umbrella label, *health maintenance organization (HMO)*, was coined in the 1970s to describe independent plans that offer benefits to an enrolled group of subscribers. The benefits cover hospital, physician, and related auxiliary services. These plans offer benefits with the requirement that both hospital care and physician services be provided on a contractual basis through the

HMO. About 570 such organizations existed in the United States in 1990, according to the Group Health Association of America.

The major characteristic of the HMO is that it combines the insurance with a broad range of health services. It must compete with commercial insurers and *Blue Cross/Blue Shield*. Therefore, it has a strong incentive to operate in a cost-effective, efficient manner. The HMO has been seen as a model for encouraging the regulation of health care costs through competition. On average, prepaid group practice is less expensive, for the same benefit package, than is traditional underwriting.

The greatest drawback of the HMO lies in the fact that the enrollee must find a physician within the HMO group for services. This often entails geographic problems, because HMO group physicians tend to practice in large, metropolitan medical centers. If enrollees go outside the HMO for health care, no benefits are available to them.

Between 1980 and 1988 enrollment in HMOs and other managed care plans more than quintupled, from 9 million to 51.5 million. One in five Americans now receives health care from among 574 HMOs available in the United States.

The most rapid growth has been among individual practice associations and *preferred provider organizations (PPOs)*. The growing limitations on consumer choice of health plans and practitioners is producing a rising tide of consumer complaints. Many states are considering limiting the growth of HMOs. This move has been initiated by physicians and nurses who find their job opportunities and incomes limited by the compensation offered by managed care companies.

Medicare is gradually expanding its Medicare managed plans. Enrollment has steadily increased, with 3 million new beneficiaries enrolled between 1991 and 1993. In 1996 nearly 9 percent of Medicare beneficiaries were enrolled in risk-contracting HMOs.

Medicaid has been the principal source of payment for public assistance (AFDC/SSI) for 30 years. The rapid shift to managed care raises concerns about access to care for the chronically mentally ill, substance abusers, and the homeless.

PPOs are either a group of providers who have voluntarily joined together to render health care on a contractual basis, or a group of providers who have been organized by a payer through contractual arrangement for a particular delivery system. The

providers can be hospitals, physicians, other health care services, or any combination of these.

PPOs are fee-for-service systems, as opposed to HMOs, which are capitated (that is, insurances pay providers a set fee in advance to cover all required services the insured person needs). Patients subscribing to a PPO have the freedom to go wherever they want, including outside the PPO system. From an economic standpoint, however, the incentive to use PPO contract providers is that they are less expensive. Under a PPO contract, standard fee-for-service charges are generally discounted. These discounts range from 10 to 20 percent for hospital services performed by a physician in a hospital environment.

The essential elements of a PPO, then, are these: fee-for-service, contractual arrangement, organization of providers, discounts, free choice, and economic incentives. PPOs are an emerging trend. There are currently about 120 to 130 such health care providers in the United States. The majority of these is provider-based, and about 48 percent of them are located in California. It is estimated that, as the health care field continues to change, at least 20 percent of the fee-for-service market will be in PPO products.

The biggest impact on health care delivery caused by the managed care explosion is a substantial reduction in hospital use. As more and more people are covered by managed care plans, incentives to cut hospital use will continue to bring the number of hospital days down. As this trend continues, it is probable that marginal providers will leave the market and that the remainder will compete on the basis of convenience, price, and quality. Health care has not been deregulated in the strict sense that airlines and financial services have been, but there is little doubt that free-market pricing for health care is achieving the same results.

Implications of Devolution

There is a growing need for knowledge about the role and effects of *managed care organizations* (MCOs) in terms of health and human services. Significant questions concern their effects on quality of care and nonprofit community-based support.

Political issues include the following:

- There are partisan struggles in Congress and the White House regarding the fate of Medicare and Medicaid.
- Governors and state legislatures that are intent on budget cuts and tax cuts are making decisions.
- There is the enhanced ability of proprietary interests to shape public policy, creating changes and uncertainty. Nonprofit community care providers are pitted against powerful for-profit nursing homes and managed care.

Economic factors include a rapid rise in for-profit ownership in all aspects of medical care, which means increased profitability for owners and shareholders. In addition, the means of achieving cost containment have become ends themselves. Political and economic attacks on entitlements make the fate of Medicare and Medicaid uncertain, and the future of LTC is entwined with them.

Deregulation is one instrument being used selectively to further goals of the federal government: The Unfunded Mandate Reform Act of 1995 limits federal power to adopt mandates for states, localities, and tribal governments without paying for them. Welfare reform and other domestic policy changes are designed to diminish the federal role in health and welfare programs. The responsibility will instead fall on the states.

Public policy is being mediated by business and provider interests, so problems of access are likely to increase. Accountability issues arise as federal oversight gives way to variable state and local data. There is little assurance of consistency or uniformity of policy with deregulation (or devolution, as it is sometimes called.)

Devolution is a term that simply means transfer of power or authority from central government to local government, delegation to another, or in some cases simplification or elimination. The latter definition does not really apply to health care issues.

Devolution raises critical questions about policy regarding health care of the aging population and LTC. The factors that affect the answers include the fiscal condition of the states, the rapid growth of managed care, and the way in which LTC services

will be integrated into these programs. The comparison of health outcomes, cost, and quality of LTC under MCOs and under fee-for-service raises myriad questions.

Continuing Debate

The United States is committed to changing the health care system. It is the only industrialized nation aside from South Africa that does not provide health care for the entire population, and the only one that does not subsidize the education of medical students.

The intensity of the debate about the appropriate roles of the government and the private sector underscores fundamental questions. Polls in the mid-1990s indicated continuing discontent with the U.S. health care system (91 percent), but no agreement about how to reform it. In the 1980s, policies favored employment of market principles (competition) to bring down prices, and less regulation by the federal government. President Clinton's plan in 1993 included both regulation and competition. In addition, it sought to assure universal coverage while curtailing costs. These conflicting goals, the complexity of the proposals, the lack of benefit to the already insured middle class, and the attack by the insurance industry and small businesses killed the plan in Congress in 1994.

The problems of rising costs, growing numbers of uninsured, inequitable access to care, and variations in quality in many cases has grown worse.

In the 1990s Congress debated how much to control costs and assure access to care; much of President Clinton's original plan, now modified, remains the focus for legislators. Managed care is still the basis of this system. One strategy is to make both providers and consumers conscious of the cost of health care by offering them a choice of plans. The providers would have to offer guaranteed benefit packages in each price category for consumers to choose. This strategy has many drawbacks, especially for the elderly and the poor, who may need the most expensive plan, but cannot afford it.

Factors contributing to the lack of success in desirable health care reform include market failure, high technology, unnecessary

care, defensive medicine, patient complexity, low productivity, and the general disfavor of a sweeping health care reform.

There is a crisis atmosphere surrounding health care. Some reform must be undertaken because the nation cannot afford to continue on its present path. No doubt there will be adverse consequences and many policy makers fear the outcome for themselves and their constituents.

Managed competition has been embraced by a number of health care reform plans and Congress. By the late 1990s managed care was already a reality for many and will continue to grow in the coming years. Managed care integrates delivery and financing of health care, but puts constraints on both patients and providers.

Hospitals are a key element in the debate. Not only do they provide essential services to the poor, such as emergency room, inpatient, and outpatient services, but they are also the major centers for graduate medical education. The major problems include loss of faculty practice revenue, threats to clinical research, and trends related to primary care. Many medical centers are making great organizational changes such as mergers and downsizing.

Effect on Health Care Providers

According to the U.S. Department of Labor's most recent statistics, more than 10 million people, or 1 in 10 working Americans, are employed in health care. Each year hospitals, pharmaceutical companies, laboratories, and equipment manufacturers generate thousands of new jobs.

The vast structural shift in health care employment in the 1990s affected all health personnel. Redistribution and retooling affect many of the nontechnical and nonprofessional jobs. Hospitals, the industry's largest employers, are predicted to be up to 50 percent fewer by 2010. Those remaining will likely merge into large associations.

There are some winners in the job redistributions. Demands for primary care physicians (family practitioners) as well as nurses with advanced degrees, such as nurse practitioners or nurse midwives, are increasing. More procedures performed outside of hospitals means jobs for skilled laboratory personnel. Computer

software and records management companies are expanding. There is an increased need for many rehabilitation specialties, such as therapists of many kinds, home health workers, and geriatric personnel. Large insurance companies will benefit and expand.

The health field of the future remains full of challenges for health personnel. Other issues are discussed in later chapters. Health care as it is known will not disappear, but may take a very changed form.

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Chapter 4



Long-Term Care

Key Terms

Long-term health care	The old-old
Voluntary nursing homes	The young-old
Government nursing homes	Geriatrics
Proprietary nursing homes	Shift in the population by age
Skilled nursing facility (SNF)	The oldest-old
Intermediate care facility (ICF)	Frail elderly
Community health agencies	Clinical pharmacology
Home health agency (HHA)	Nutrition
Meals on Wheels	Social services
Hospice	Multidisciplinary and interdisciplinary activities
Primary care centers	Optimum potential
Mental health centers	
Shelter care	

Objectives

After studying this chapter the student should be able to:

1. Differentiate between skilled nursing and intermediate care facilities.
2. Describe the services provided by each of these agencies: (a) home health, (b) hospice, (c) primary care, (d) mental health, and (e) shelter care homes and workshops.
3. Identify the health care requirements of long-term care agencies in the twenty-first century.
4. Explain the shifts that must occur in training personnel to care for long-term care patients.
5. Discuss future trends in long-term health care.
6. Name four deterrents to progress in long-term care reform.

The aging of the population is a challenge to the U.S. health care system. The older population has the greatest incidence of disability and chronic diseases and needs substantially more health care services than younger populations. The care of those who are older or disabled is inadequate in the United States, creating a growing burden and many inequities in access to health care.

In 2001 life expectancy was 78.9 years for women and 72.5 years for men. Individuals who are 65 now can expect to live to age 83 and those who are 75 now can expect to live to age 86.

More than 25 years of research has shown severe problems with the nursing home industry in the United States. Often profit-driven, it provides unprofessional health and social services for most of the frail older people in society.

Long-term health care is defined as the help needed by people of any age who are unable to care for themselves because of physical and/or mental impairment. As the term implies, this care is for extended periods of time, ranging from months to years or a lifetime.

People tend to regard long-term care as being only for the aged, but the fact is that there are more impaired children and adults under 65 years of age than there are elderly impaired. However, with the dramatic increase in the over-65 population, and especially those over 80, the need for long-term care is increasing and costs are escalating. Cost containment is a major issue (as discussed at length in Chapter 3), one to which the aging population is addressing itself with vigor. The personnel needed for the provision of this care is another critical health issue.

While families, friends, and neighbors may be able to help the disabled, family units have become smaller over the years and most able people are working. There is frequently no one around to take care of the disabled or elderly who cannot cope with the tasks of daily living. For some of these people, community-based services are an alternative to institutional care, but for many others they are not enough. These individuals include the vast numbers of chronically and/or mentally ill, the frail elderly, impaired children, and the permanently disabled.

Long-term care facilities are more than just nursing homes, although these make up around 70 percent of the beds of all such facilities. Other long-term care establishments include psychiatric and mental retardation hospitals, chronic disease hospitals, tuberculosis hospitals, and rehabilitation hospitals. Types of long-term care within the system are home health services, community and

neighborhood health centers, shelter homes and workshops, and hospice programs.

Since the population 65 years of age and older will continue to increase rapidly through the year 2020 and beyond, this chapter focuses on the need for various health services for the elderly, as well as the need for qualified practitioners to carry out these services. The discussion covers nursing homes, community-based health services such as home health agencies and hospices, personnel needs, and trends in the needs for long-term care.

Nursing Homes

Nursing homes had their origins in county poor houses (almshouses). They were first established in the nineteenth century to care for the poor and provide them food, shelter, and clothing. Over time they became community dumps for castoff unfortunates. The conditions in these places were atrocious. Society gets what it pays for; many accounts of starvings, beatings, and murders erupted from time to time, creating scandals. This prompted states to set up regulations governing nursing home care, but since most states were unwilling to close the proprietary or *voluntary nursing homes*, because they would then be responsible for the occupants, they chose to look the other way.

In the twenty-first century, nursing homes that have developed under other sponsorship such as church groups, fraternal organizations, and volunteer groups are proliferating. Many have started homes to care for their members. It is widely acknowledged that the quality of service in these types of nursing homes is high. The shortcomings of *government* and *proprietary nursing homes* continue, however, as do periodic reports of scandal. Homes that cheat patients, physically and mentally abuse patients, neglect care or provide inadequate medical and nursing care, and are firetraps frequently make the news. To make matters worse, the number of people who need good long-term care is growing, and the available beds are totally insufficient.

Of the available nursing home beds, the proprietary sector was clearly in front, commanding 70 to 80 percent of the market until the late 1990s. The poor and chronically ill who needed nursing home care the most were at the bottom of the list for proprietary

nursing homes. Many of these homes also restricted the types of patients they would admit, preferring not to have persons who required a great amount of care or who might damage the property. Long waiting lists for admission of Medicare/Medicaid patients resulted from these restrictions, prompting Congress to enact legislation to construct nonprofit nursing homes. With the rising costs of nursing home care, most of the private paying patients had to convert to Medicaid as soon as their funds were depleted. Medicare/Medicaid patients are now welcomed at most proprietary institutions.

With the advent of Medicare and Medicaid came federal stipulations governing eligibility. There are now two types of recognized homes: skilled nursing facilities and intermediate care facilities.

A *skilled nursing facility (SNF)* is a nursing home that provides the level of care closest to hospital care. There are 24-hour nursing services, medical supervision, rehabilitation, physical therapy, pharmacy and dietetic services, and occupational and recreational therapy provided in accordance with federal guidelines. Skilled homes are for convalescents and patients with long-term illnesses. They must be recertified every 100 days.

An *intermediate care facility (ICF)* provides less extensive care and services. People in intermediate facilities usually need daily personal care because they are not able to care for themselves or live alone, but they do not need 24-hour care. While nursing care is provided, it does not have to be around the clock. The emphasis in an ICF is on personal care and social services. Some also use rehabilitative and occupational therapists. These homes must meet federal guidelines to receive government funding.

Many general hospitals also have extended care, skilled nursing units within their facilities. With fewer acute care beds occupied, the units can generate income that allows the hospital to remain open.

Federal standards were meant to raise the quality of nursing homes. States had failed to provide uniform standards through their own licensure laws, so this became an important step to improve care. The process is continuing, but it is an uphill battle because of the rising number of people needing care, new kinds of care needed, and the ever rising costs in a difficult economic period. The costs of nursing home care quadrupled in the last decade.

It is believed that many of the elderly who make up 85 percent of the population of nursing homes would not need this type of

care if long-term services were available in the community. Community-based long-term care services should continue to grow as the government liberalizes its policies for alternatives to nursing homes. Another reason for the growth of community services is the fact that most people and their families prefer to avoid institutionalization whenever possible.

Community Services

Findings of an NIH committee on personnel health needs of the elderly clearly established that the older population will require expansion of a wide range of health services, including preventive, primary, long-term, hospice, and rehabilitation care. Expanded services can help many older people maintain functional independence and remain at home for longer periods. If recent rates of chronic disability and use of health care are maintained, consumer demands for a greater number and variety of health services will more than double by 2020. A wide range of well-educated health personnel, ranging from aides to medical specialists, will be required to respond to these diverse needs.

More research is needed before definite conclusions can be drawn about the effect that liberalized, expanded, community-based services will have on health costs. The critical issue is not whether these expanded services are less costly than institutional care, but rather how they should be organized to provide maximum efficiency for the increasing numbers requiring their services.

Community Health Agencies

Home Health

Home health agencies (HHAs) provide part-time nursing care in patients' homes, as well as other services such as physical, speech, and occupational therapy; social services; and sometimes medical supplies and equipment such as wheelchairs, walkers, and so forth.

Homemaker services may also be part of the package. Home health may be independently operated, managed by a public health department, or hospital-operated. Their services may be financed by patient fees, government grants, private insurance, or Medicare and Medicaid. Variations of HHAs include the well-known Visiting Nurse Association, which most often employs Public Health Service (PHS) nurses. These nurses go to patients' homes and change dressings, give injections, and request other types of services as needed.

Meals on Wheels is another HHA variation. This agency supplies one hot meal a day (usually lunch) to shut-ins. It may also add a snack for dinner to go along with other foods the patient may have in the house. Patients on therapeutic diets for special conditions can be accommodated. Contracts are made with various agencies (most often hospitals) to provide the meals, which are usually delivered by volunteers.

Hospice

In 1967 the hospice movement was resurrected from the medieval era in England. Whereas the first hospice cared for the wounded, sick, and dying, modern hospice cares only for the dying.

Hospice is operated on the principle that the dying have special needs and wants that hospital personnel are too busy to handle. Hospice care helps manage pain and other symptoms associated with dying when conventional treatment is no longer of value. It allows the dying to spend their last days in their homes among people who are sensitive to their needs and wishes. Hospice seeks to improve the quality of the last days of life. About 90 percent of hospice patients are victims of cancer. Most hospices offer only home services, though some have added bed care facilities, since they are more likely to be funded by Medicare—this funding comes not as a humanitarian measure, but as an effort to reduce the cost of hospital inpatient care for the terminally ill. The addition of Medicare hospice benefits will achieve significant cost savings as well as serve the needs of the elderly terminally ill more appropriately and humanely.

Primary Care Centers

Community *primary care centers* provide a limited range of services and focus on primary care. They are expanding rapidly, especially in rural areas, where there is difficulty attracting and retaining health professionals. Usually these centers have one or two family practitioners, a dentist, some nutrition services, some pharmacy services, and perhaps social services. Because the centers are usually in depressed areas, financing by fees is a big problem. The long-term survival of these centers depends on attaining financial stability and retaining professional personnel.

Mental Health Centers

Community *mental health centers* were greatly enhanced by the development and subsequent improvement of psychotropic drugs, a movement that began in the 1950s. As local health departments began to report successful treatment of mental patients outside of institutions, federal legislation was enacted for construction of community mental health centers. They were also provided staffing, conversion, and distress grants. The centers, in turn, provide inpatient, outpatient, day care, and emergency services. They are required to provide specialized services for mental health of children and the elderly, and special prevention, treatment, and rehabilitation programs for alcoholics and drug abusers and addicts. The decline of federal monies for local services has affected the comprehensiveness of the centers' services and even the survival of many of them in the places they are needed most—poverty areas.

Shelter Care

There are both *shelter care* homes and sheltered workshops available to long-term care recipients. If a person needs only to be maintained so that he or she receives the basics—food, shelter, clothing, companionship—and has no major physical problems that require nursing care, then a carefully chosen *shelter home* may be sufficient. Since 1984 there have been federal regulations in effect that govern shelter home operations. These include, but are not

limited to, an adequate balanced diet, acceptable sanitation and safety features, and some consulting services from professionals.

Sheltered workshops exist for the physically and mentally challenged. These are places where the person can learn a repetitive skill and be sheltered from the normal work world. The work and production schedules are not geared to commercial output. The capabilities of the worker are taken into account.

Personnel Needs

It is projected that the population 65 years and older will increase by 2 percent per year by 2020, compared to an increase of less than 1 percent per year for younger persons. The 85-plus segment (the “*old-old*”) experienced the most rapid growth before 2000. The 65 to 74 segment (the “*young-old*”) will increase fastest between 2000 and 2020. While only 5 percent of the 65-plus population lived in nursing homes in 1994, the percentages increased dramatically with age, ranging from 1 percent of persons between 65 and 74 years of age, to 5 percent of persons between 75 and 84 years of age, and 25 percent of persons 85 years and older.

If recent rates of chronic disability and health care use continue, consumer demands will more than double by 2020. Requirements for personnel specifically prepared to serve older people will greatly exceed the current supply. Health care practitioners will routinely serve older people in the future as part of their regular duties. This care will make up approximately one-third to two-thirds of the workload of physicians and other types of health care personnel.

Although attention to aging and *geriatrics* has expanded in recent years, most health education programs give little emphasis to these issues. There must be greatly expanded programs to prepare personnel to provide services in homes, hospices, nursing homes, and other community programs. Financing of geriatric education has come from many sources, including state and local public and private funds and federal programs. Nationwide data are not available as to the extent of this funding.

Personnel needs to ensure adequacy and availability of health care for older persons should be monitored and modifications made in health care delivery and financing as needed. To provide responsive care to older persons, greater emphasis on the special

needs and conditions of older persons should be included in the education of all health and human service personnel. This education should include skill in the priority services for high-risk groups as well as knowledge of cultural differences. Ongoing studies and research on the special psychological and physiological aspects of the elderly need to be funded by government sources at all levels.

Demographic Trends and Projections

The staggering statistics of the aging of the population emphasize the trend that will occur in future health care as well as how and where that care will be delivered. By the mid-twenty-first century, as a result of the rapidly increasing over-65 population, the number of elderly individuals will triple. In 1993 there were 4 million, by 2020 there will be 7 million, and by 2050 there will be 19 million. The need for LTC (home and nursing home care) and the associated costs will increase tenfold. It will put extraordinary demands on the LTC system.

Unrelenting issues of health care costs and access, gaps in private insurance protection and negligible LTC insurance coverage, and quality of care for the elderly are all problematic. Out-of-pocket expenses of the elderly continue to increase. Medicare currently covers less than one-half of their health care. Congressional budgets added more than \$10 billion to out-of-pocket expenditures to beneficiaries in 1996 alone, but the cost continues to rise. Older women pay as much as 42 percent of their annual income for medical expenses not covered by Medicare.

Modern Maturity, the AARP (American Association of Retired Persons) journal (May/June 1997), cited the side effects of the bills in Congress in 1997 on the health care reverses for the elderly:

1. They would trim \$115 billion from spending.
2. Use of discriminatory "means testing" (higher deductibles for individuals earning more than \$50,000 per year, or \$75,000 for couples) would increase. The deductible for these people would rise up to \$2,100 for physician services. There will be no help with Part B of Medicare, which pays for up to 80 percent of covered office visits and procedures now.

3. Those with home health services would pay up to \$500 per year.
4. If Congress passes the bill to raise the eligibility age for Medicare from 65 to 67 years, it would create a new group of uninsured.

To achieve a balanced budget in 2002, if Congress cuts Medicare spending by \$115 billion, most of the reductions will be achieved by reducing growth in payments to hospitals, HMOs, physicians, and other providers. Part B costs rose from \$46.10 to \$54.00 per month in 2002. Home health visits will require a copayment of \$5.00 per visit. The fate of Social Security will be considered separately from Medicare.

The proportion of the elderly population that is female is expected to decline slightly in the future. By 2020 the number of males and females between 65 and 74 years should be about equal. It is predicted that there will be more intact couples until the oldest age group (85-plus) is reached, in which about three-fourths are expected to be female.

Healthy People 2000 profiled the American people for the year 2000 as follows:

In 2000 the overall population was expected to grow to nearly 270 million people. The population will be older. The 35 million people over age 65 represented about 15 percent of the population. The population of the "oldest-old" increased by about 30 percent to a total of 4.6 million.

In 2000 the racial and ethnic compositions were also different. Whites represented a smaller portion of the total, declining from 76 to 72 percent. Hispanics increased from 8 to 11.3 percent, more than 31 million. Blacks increased from 12.4 to 13.1 percent. Other groups, including Native Americans, Alaska Natives, and Asians, increased from 3.5 to 4.3 percent of the population.

The entry rate of these groups into the workforce was higher than that for whites. Women of all groups accounted for 47 percent of the workforce. White men accounted for only 25 percent.

By 2000 the American population was predicted to increase by 6 million people with immigration. Cities and states on the east and west coasts received the largest number of immigrants.

Such data are crucial to decisions and programs regarding health and health care for the future.

Data from the 2000 census are not yet available to determine how accurate these figures were, but preliminary data indicate they are on target.

Potential Health Care Needs

Future health care needs will depend in large part on the health and functional status of the growing elderly population. The potential needs discussed here may assist students in determining where future personnel needs might be greatest and how they might best serve in health care.

In the future, the majority of older individuals are likely to be healthy and able to function independently. More than 90 percent of the present elderly population are living in the community, and more than two-thirds of this group perceive their health to be good to excellent.

Chronic diseases, arising from both emotional and physical causes, will be the most important of the future disabilities. Chronic disease, which is managed rather than cured, will require continuing services from physicians and other health care personnel. Most adults develop one or more chronic health problems. These conditions range from relatively minor to very severe. The minor problems require little care from others, but the severe ones require increasing amounts of care and professional help. Chronic conditions tend to be cumulative, so the elderly, especially the old-old, often experience multiple problems and require a substantial amount of services.

The 10 most prevalent chronic conditions during the 1990s for noninstitutionalized elderly were, in order of prevalence, arthritis, hypertension, heart disease, hearing impairment, orthopedic impairment, cataracts, chronic sinusitis, diabetes, visual impairment, and varicose veins of the lower extremities. Most chronic conditions tend to increase markedly after 75 years of age.

Mental impairments have serious impact on the functioning of many elderly. These include acute and chronic mental illness, mental retardation, and reactive psychological distress, the most debili-

tating being depression and schizophrenia. Epidemiological studies indicate that up to 28 percent of the elderly have significant psychiatric symptoms. Depression is more common in those who also have a physical disability. Mental impairment also affects how well the individual handles whatever physical problems there may be, and whether he or she can remain in the community or must be institutionalized.

The prevalence of mental impairment increases with age. There is an increasing incidence of the dementias. Increased longevity among already impaired individuals, such as the mentally retarded, will contribute to the greater number of persons with all types of mental impairments in the years to come.

Dental needs among the elderly are often serious. More than 80 percent of the elderly living in the community have dental-related problems.

As people live longer, the prevalence of nonlethal disability may increase. The most debilitating conditions producing functional impairment among the healthy elderly are dementia, stroke, and hip fractures. The number of hip fractures doubles with every five years of age; by 2020 there could be as many as 4 million cases annually. Dementia is also expected to increase from 2.5 million to more than 5 million cases by 2020.

There is another special group that future health care must address—*the oldest-old*. This group is 85 years of age and older. In recent years they have been the fastest growing segment of the population. Furthermore, life expectancy at this advanced age is increasing. Seventy percent of this group is female, mainly widows. The most common causes of disabilities in the old-old group are dementia, arthritis, peripheral vascular disease, cerebral vascular disease, and hip fracture. This age group, many of whom have serious mental impairments, accounts for more than 40 percent of nursing home residents. Alzheimer's disease is estimated to affect over 20 percent of this age group.

It is noteworthy, however, that of the oldest-old living in the community, at least 40 percent report no limits in their daily activities, and 60 percent of this group perceive their health to be good to excellent. Physicians' visits are no more frequent for them than for the young-old. Hospital stays and nursing home residence, however, are much more prevalent than for the young-old.

Health Service Needs

A very broad range of services is required to address the health care needs of the older population. Services include prevention activities, primary care, acute care, post-acute care, rehabilitation, and long-term and hospice care.

Since the old-old population is the one increasing most rapidly, the services needed in the twenty-first century will be focused on maintaining the functional capacities of persons of advanced age and to provide long-term care to the *frail elderly*. After the year 2000, a more rapid expansion will occur in the young-old group. They will need more prevention, primary, and acute care services. Many of the health and related care services for the elderly will take place in community settings. The vast majority of disabled elderly now receive all their care in the community, and this trend is expected to continue. The workplace of some health care personnel, therefore, will shift. There will also need to be new sites for health care, such as new residential and living arrangements, and expansion of integrated care systems, involving institutional and community facilities, case management, and cost-sharing arrangements. More emphasis will be placed on rehabilitation and self-care.

Other prospective changes specifically in the health field include greater technology to detect and treat diseases, increased availability of health insurance benefits, more professional and public interest in community-based services, a concentration of the sickest patients in hospitals, new health programs for low-income groups, and a large supply of physicians and other health personnel. These factors will increase the use of health services.

Shifts in Training Health Personnel

Health personnel in the coming years will need to develop a broader understanding and competence in geriatrics. An extended curriculum to encompass these goals should be established. It likely will include a variety of clinical settings and short-term, intensive courses to bring practitioners up to current knowledge levels.

Since physicians direct the work of other health personnel, they, in particular, will need to develop additional competencies and leadership roles for the practice of geriatric medicine. All

physicians should receive education and training in geriatric medicine as part of their professional preparation. Care of chronically ill, frail elderly persons should be emphasized. Special attention should be focused on *clinical pharmacology*, especially for patients on multiple medications, sensory loss, dental needs, and *nutrition*.

Dentists, dental hygienists, and dental assistants will be serving substantially larger numbers of elderly. Like nurses, they should receive education concerning the special needs and conditions of the elderly as part of the basic preparation. Professional nursing students in the past have had limited curricular content focused on the care of aged persons. Innovative educational preparation with focus on needs and care of the elderly must be emphasized. Expanded knowledge and skills, with stress on health promotion and nutrition for the elderly, is needed by nursing personnel. They should be encouraged to go into gerontological nursing or to specialize in advanced gerontology education.

Social work personnel must be prepared to meet the diverse *social services* needs of the elderly. They will require a specialized knowledge of the aging process and the interpersonal dynamics of the aging and their families.

A large number of other types of health personnel are increasingly involved in the care of older persons, both at the community level and in institutions. Many different occupations and specialties make critical contributions to the care and well-being of the elderly. Often the care of the elderly calls for *multidisciplinary* and *interdisciplinary activities*. Diverse competencies and skills are required to respond effectively to the challenge of caring for the aged population; appropriate use of well-prepared allied health professionals and supporting health personnel will be critical to maintaining such a large elderly population at their *optimum potential*.

Part II of this book describes the work of many health professionals and supporting personnel in great detail. The Bureau of Labor Statistics identified more than 10 million health workers in 200 occupations in 1995, and the projected number for 2000 was 12 million in 250 occupations. More than 400,000 additional jobs are expected in physicians' offices. The most rapid growth, however, is expected to be in offices other than doctors', such as those of physical therapists, outpatient facilities, nurse practitioners, and home health agencies. Each of the professions will need expanded

personnel to take care of the aging population. Students considering a career in the health field are encouraged to continue—their services will be greatly needed.

Future Trends

The need for health services will increase dramatically in future decades because of the drastic increase in the elderly population; the exact nature and scope of the health care system remain uncertain. Changes in the structure of the health care system and uncertainty about how to finance future health care make it difficult to project career situations precisely. Under any conditions, however, the trends indicate a need for substantial increases in the number of health personnel specifically prepared to provide services to older persons.

The use of health services will be concentrated among older and very old persons. This fact has important implications for the education and training of all health care personnel. The impact of these changes will have an increasing role in the delivery of health care and on the economy of the United States.

Summary

Prospects for long-term care reform when the baby boom generation needs it will become a major domestic policy issue. If nursing home utilization rates remain constant, on an age-specific basis there will be 5.7 million people in institutions in 2040 compared to 1.6 million in 1990 (U.S. Census, 1990).

The near future for LTC is less certain. There is pessimism about progress regarding LTC due to its private and public costs, tax cuts, funding and financing problems currently evident in Medicare and Social Security, and lack of consensus among policy makers.

In 1999 a coalition was formed among organizations from all segments of the LTC and political spectrum as well as consumer

groups, with the goal of putting LTC on the national agenda again. Its goal is to educate the public by raising awareness of the issue of LTC financing (Harrington and Estes, pp. 211–212).

LTC returned to the national political agenda in 2001, but in radically altered form. Its priority was subsequently pushed into the background by the war on terror, and will probably not receive any congressional action before 2002.

Medicare, which is the universal health insurance for the elderly, does not cover LTC. Medicare is basically a women's issue. This lack of coverage is especially troubling for older women, who outlive and outnumber men by 3 to 2, with the gap widening with advancing years (Harrington and Estes, p. 89). Chapter 5 addresses some of the problems of older women's health, access to care, and Medicare issues for the twenty-first century.

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Chapter 5



Aging, Health, and Women's Issues

Key Terms

Biological	Long-term care (LTC)
Physiological	Medicaid
Dichotomy	Managed care
Alzheimer's disease	Care giver
Health Care Financing Administration (HCFA)	Demographics
Medicare, Part A, Part B	Alternative care facilities
	Interdisciplinary

Objectives

After studying this chapter the student should be able to:

1. Identify the primary cause of the gender gap in women's health care.
2. Name three reasons why women are more dependent on public health programs than men are.
3. Identify three problems related to women's access to health care.
4. Explain the differences between Medicare and Medicaid insurance.
5. Identify the major benefits provided by Medicare Part A.
6. Identify the major benefits provided by Medicare Part B.
7. Name three groups of people who are eligible for Medicaid insurance.
8. List at least three benefits provided by Medicaid that are not provided by Medicare.
9. Explain how financial issues affect the quality of care, particularly for older women.

In Chapter 1, we summarized the trends in U.S. health care from 1990 to 2001 and pointed out the need for new strategies to specifically address the health of women. This chapter briefly explores the role that gender and age play in determining women's health care.

Gender-Specific Roles in Health Care

Women's health concerns have traditionally been treated the same as men's, without recognition that women have *biological* and *physiological* needs different than those of men. In addition, women have less money, have lower rates of insurance coverage, and are more dependent on public health programs than are men. Although the lifespan of women has increased significantly since the beginning of the twentieth century, by some 30 years, research into gender differences in outcomes for all health conditions specific to women has lagged far behind the research on specific men's health concerns.

Health care coverage for women remains a critical issue, although efforts are under way to bridge the gender gap. Low-income and less-educated women are less likely to receive needed services than are their higher-income, more-educated counterparts. These facts contribute significantly to deficiencies in the health care system.

The health status of older women is a *dichotomy*. Improvements in nutrition, hygiene, and technological advances in medicine have extended life expectancies, increasing the numbers of older people. On the other hand, although females live to older ages, their advancing years are often lived with multiple illnesses and disabilities. They suffer from higher rates of chronic conditions and greater numbers of conditions than do men. For example, women are at greater risk for *Alzheimer's disease*, and they are twice as likely to suffer a major depression than are men (*Healthy People 2010*).

A woman's access to health care influences her ability to take advantage of the progress being made. The availability of Medicare, in turn, determines her access to health care. Women have greater dependency on Medicare, resulting from increased longevity, higher rates of poverty, and poor health status. Lack of

coverage for prescription drugs and insufficient long-term care disproportionately affect older women, who have higher out-of-pocket costs but lower income. As a function of their greater longevity, women account for a greater percentage of Medicare beneficiaries than do men, and they therefore need Medicare for more years.

Medicare for Older Women

The *Health Care Financing Administration (HCFA)* oversees the *Medicare* program. Medicare covered benefits apply mostly to the treatment of patients with acute illnesses. Although chronic conditions are addressed, supportive *long-term care (LTC)* is not generally covered. Medicare also does not pay for outpatient prescription drugs or routine foot, dental, or vision care.

Medicare is divided into two parts.¹ *Part A* is hospital insurance, and all elderly beneficiaries are automatically enrolled. *Part B* is supplemental medical insurance and is voluntary, although the majority of elderly clients signs on. The current monthly premium is \$54.00.

Under Part A, Medicare pays for all reasonable hospital expenses minus a deductible (\$812) for the first 60 days of each benefit period. Days 61–99 require a daily \$198 coinsurance payment, and days 91–150 require a \$396 copayment daily (2002).

Part B pays for doctors' services and outpatient hospital services, including emergency room visits, ambulatory services, diagnostic and laboratory tests, physical therapy, occupational therapy, speech pathology, and durable medical equipment. It does not pay for routine physical examinations, preventive care, or services not related to injury or illness. Medicare pays 80 percent of the

¹Excerpted from "The American Health Care System: Medicare" by John K. Inglehart in *The Nation's Health*, 6th ed., Lee and Estes, p. 349.

approved amount according to a fee schedule for covered services, in excess of a \$100 deductible.

Medicaid for Older Women

Other than being administered by the HCFA, Medicaid and Medicare structures have little in common. *Medicaid* is the largest health insurer in the United States, covering medical expenses and LTC for approximately 41.3 million people. It pays for covered services for low-income people who are elderly, blind, receiving public assistance, or among the working poor.

In recent years important changes in Medicaid have occurred. The greatest change was the expansion of the population deemed eligible for Medicaid—namely, the provision of medical assistance to disabled and elderly people.

Payment of the staggering Medicaid bill (\$206 billion in 2000) is divided between federal and state governments. The federal share is determined by a formula based on each state's per capita income. States with relatively low per capita incomes receive more federal funding. Medicaid expenditures represent about 40 percent of all federal funds received by states. There is a large variation in eligibility for benefits from state to state, because the states, under federal guidelines, set their own criteria.

Adults and children in low-income families account for three-fourths of Medicaid beneficiaries, but their care accounts for only 30 percent of the total expenditure. Elderly, blind, and disabled persons account for the remainder because of their greater use of acute and LTC services.

Medicaid covers a broad range of services not covered by Medicare, acting as a supplemental insurance for the elderly and disabled. It also pays their Medicare premiums, includes cost-sharing requirements, and covers prescription drugs.

A large number of the elderly do not take advantage of Medicaid coverage because of inability to navigate the publicly run system.

Medicaid operates under tight budget constraints, resulting in provider payment rates that are substantially below market rates.

This is a problem for *managed care* companies (to which many Medicaid recipients are referred), causing a substantial number of them not to bid on contracts or to opt out of the system entirely. Many physicians in private practice do not accept Medicaid patients for the same reason. Both factors decrease access to care by the elderly population (J. K. Inglehart in *The Nation's Health*, Lee and Estes, p. 399).

Women's Issues and the Health Care System

The overwhelming majority of health care workers is female. In the health care system there are significant ways in which women are treated differently, whether they are patients or providers of health care. Women's roles within the system are also different from men's. Large numbers of women now practice medicine, but the field is dominated by men. Men hold prestigious posts as professors and deans in medical schools; women work in lower-paying positions such as nurses, technicians, and therapists. Women with less training and education work in low-paying jobs such as nursing assistants, home health aides, housekeeping, and dietary aides.

Women get sick more often than men do and need health services more often. Over their lifetime they spend more time in hospitals. Both sexes need and use more medical care as they grow older, but women's access to care is often more limited than men's. Finances are the critical issue, as women are far less likely to be able to pay for health care they need. Many health care employees lack any insurance coverage or are underinsured, especially those in physician's offices and home health services.

Women as Care Givers

Care giving is the traditional role of women. Nearly two-thirds of *care givers* of the elderly are themselves older women. Many care for both grandchildren and older family members. The extent to which women engage in care giving across their lifespan impacts

their own health as well as their economic security. Higher rates of stress and depression, use of prescription drugs, lack of attention to personal health conditions, and lack of social and recreational activities are among the many consequences.

Conclusion

Three-fourths of the nation's elderly poor are women. By 2020 poverty will be almost exclusive to older women. The current health care delivery system, financing, and policy fail to meet the needs of women, especially older women.

The traditional disease-based medical model for health and the separation of women's health from concerns about aging have been missing from public discussions and policy debates regarding reform of the health care system. Gender-specific implications when formulating policy changes must be addressed, especially health care for older women.

The unmet needs in older women's health care are myriad: research into the relationship between health and socioeconomic status, health care financing and policy, gender bias in the disease-based medical model, health consequences of gendered care giving, the gender-specific impact of LTC policy, limitations of Medicare and employer-based insurance, and prescription drug benefits.

In the twenty-first century we must seek a solution to make adequate health care coverage available to women. Health care reform has been debated since 1994, and some incremental changes have occurred (namely, the managed care revolution), but progress is very slow. In the coming decades there will be many changes in *demographics*, occupations, economics, and social roles for both women and men. We need to improve research, services, and education about women's health issues now so that all women will have better health in the future.

The Future of Health Care

The health care environment will continue to change, but some factors are here to stay. Prospective payment may change in scope and form, but cost containment will remain part of the health

environment. The future carries ramifications for financial and ethical decision making and for the education of health personnel.

1. The elderly population will continue to grow, with the proportion of those over 65 doubling by 2020 as postwar “baby boomers” reach age 65. The management of chronic, disabling conditions will be a priority issue in health care.
2. Future growth is anticipated in multihospital systems, ambulatory facilities, and alternative delivery systems. There will be an increased need for extended care facilities, because hospitals will care only for short-term, acutely ill people.
3. Problems of access to care and quality of care will continue to multiply and need to be addressed at once. As the number of uninsured grows, health professionals and providers will be faced with very difficult decisions. Consumer expectations of health care may require modification. *Alternative care facilities* and alternative care givers may greatly affect the levels and quality of health care. Consumers will have to be educated to become more self-directed in preventive health maintenance and to know what level of care they can expect. It may no longer be possible to provide the highest level of care to all citizens. There may be establishment of minimal levels of care for all patients by government agencies, with additional services for those willing to pay for them.
4. A continued expansion of sophisticated information and technology is anticipated, with these systems being capable of integrating clinical and financial data. “Medicine by computer” may be the next phase of health care. Allied health personnel may be the link among physicians, computers, and clients.

Future Education for the Health Professions

Health care personnel of tomorrow need to begin now to develop some special skills to deal with future changes. First, curricula must include the requirements and care of the elderly population. A second requisite is the need to assume an active role in developing acceptable health policies. Psychosocial needs and health education needs of the population must be taken into consideration.

Health professionals must be able to assess needs accurately and teach at all levels.

Because health care providers will have to address new health issues, policies, technologies, and practice guidelines over their careers, continuing education programs will need to be updated periodically (*Healthy People 2010*).

Racial and ethnic groups account for 25 percent of the U.S. population. It is recommended that, in the health professions, allied and associated health profession fields, and nursing fields, an increased proportion of all degrees be awarded to members of underrepresented racial and ethnic groups (*Healthy People 2010*).

Health personnel need to become business-oriented. They must be proficient in the use of computers and their applications in their areas of specialty. Computers must become a part of daily life and continuing education. Personnel must understand the financial management of health care delivery. They will need to be able to contribute their part to cost-effectiveness of services rendered.

Interdisciplinary respect and understanding will be critical for future health professionals. An ideal mechanism to achieve this would be shared educational experiences, with a health science core of studies and laboratories that allows students from many disciplines to interact and jointly provide care. Would-be health care professionals must learn to establish strong, effective, collegial relationships with practitioners of all other health care disciplines. In this way the student of today can prepare for a leadership role in guideline development, the political process, and national health care planning and research.

As turbulent as the current situation in health care is (and the turbulence will continue in the foreseeable future), this is an exciting, challenging time to be preparing for a health career. New ideas, experimentation, risks, and competition do exist in health career paths, and there can be much satisfaction, self-growth, and pride in contributing to the health of the nation.

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Chapter 6



Health Career Planning

Key Terms

Inpatient and outpatient facilities and services	Maldistribution of health personnel
General hospital	Primary health care
Specialty hospitals	Primary care physicians
Industrial health care	Family practitioners
Career alteration due to new technology	Alternative choices of careers
Expanded functions	Licensure
Rural and inner-city opportunities	Professional certification
	Professional registration

Objectives

After studying this chapter the student should be able to:

1. Obtain all facts pertinent to careers in health services.
2. Recognize the specialized knowledge and skills necessary for a given profession.
3. Evaluate employment opportunities.
4. Find an appropriate health career.
5. Select the appropriate school for training.

Since health care has developed from a small concern into a multi-billion-dollar industry and the largest employer in the United States, it is appropriate that this book assist students in obtaining facts that will steer them toward satisfying careers in health services. The first five chapters in this book have been devoted to the development of health care services, health care delivery, and many of the issues involved in meeting the goals set for health care. This chapter focuses on the personnel issues—where and why health professionals are needed.

A vast amount of knowledge has accumulated since 1900. One result of the knowledge explosion has been a necessary increase in medical personnel who can be grouped by their specialized knowledge and skills important to health care activities. The techniques and instruments developed in response to the new knowledge are extremely important; they have affected the staffing patterns and content of educational programs of many of the health services and precipitated the development of new health occupations. Both medicine and dentistry have developed subspecialties, and both are becoming more dependent on the services of additional personnel in the diagnosis and treatment of disease.

Health care has grown into a complex system with many important links, which are examined briefly in this chapter. Understanding where the system is and where it might be going should give students important clues to career opportunities. This understanding will help in evaluating where the jobs are likely to be and discerning where a particular health career fits into the entire picture.

Employers of Health Professionals and Health-Related Personnel

The vast health care system offers employment in a wide variety of environments. Although hospitals and physicians' offices may come to mind as the most obvious settings for health care professionals, other employers abound, in both *inpatient* and *outpatient facilities*.

Hospitals

As a group, hospitals are the best known and largest single employer of health workers. As discussed in Chapter 2, the *general hospital* cares for patients with various medical conditions requiring diagnosis and surgical/medical treatment. This is the hospital people are most likely to see in their own community and to visit if they have medical problems. General hospitals represent 87 percent of hospitals. Patients in these hospitals generally stay a short time—a few days to a few weeks.

In *specialty hospitals*, patients are usually limited to those who have a specific illness or condition. Specialty hospitals may be for psychiatric illness, chronic disease, and rehabilitation of patients. Specialty hospitals are identified as “long-term” because their patients are usually hospitalized for several months before they are well enough to return to their homes.

Both specialty and general hospitals vary in size. Some have as few as 18 hospital beds, while others have well over 1,000 beds.

Nursing Homes

Nursing homes were almost unknown before the 1930s but have grown rapidly in number since then. By the late 1990s there were more than 22,000 nursing homes, employing more than 700,000 people, with many more projected to open in the twenty-first century.

Depending on the individual nursing home, the services offered vary from skilled bedside nursing to simple personal care (bathing, dressing, providing meals, and so forth). Although nursing homes are populated mainly by the elderly, adults of any age who are victims of certain conditions or accidents may require nursing home care.

Other Inpatient Facilities

In addition to nursing homes, there are more than 5,000 other residential health facilities for persons who do not need hospitalization or nursing home care. These include residential schools or homes for the mentally retarded, emotionally disturbed, physically

handicapped, deaf, blind, alcoholics, and drug abusers. About half of these facilities are for the mentally retarded and emotionally disturbed; these employ three-quarters of the 250,000 workers engaged in inpatient care.

Outpatient and Other Health Facilities or Services

Nearly 500,000 health workers are employed in vital types of settings or services that are often overlooked as part of the health industry when career opportunities in the health fields are being evaluated. The following list describes some of them.

- *Ambulance services* transport patients and frequently provide emergency medical services.
- *Blood banks* draw, process, store, and distribute human whole blood and its derivatives.
- *Clinical (medical) laboratories* test samples of tissues or fluids to determine the absence or presence and extent of diseases and thereby help physicians diagnose or treat illness.
- *Dental laboratories* provide services to dentists by making and repairing artificial teeth and other dental appliances.
- *Family planning services* provide physical examinations, laboratory tests, consultations, education, treatments, and issuance of drugs and contraceptives related to reproduction.
- *Home health services* provide health care and supportive services to sick or disabled persons at their place of residence when their illnesses do not require hospital or nursing home care or when their disabilities do not allow them to travel to an outpatient facility.
- *Opticians' establishments* sell and/or make eyeglasses according to the prescription of an optometrist or an ophthalmologist.
- *Poison control centers* provide comprehensive services to the population regarding the effects of toxic substances and the antidotes available.
- *Community mental health centers* provide comprehensive services to people with physical, mental, or social disabilities to

help them return to satisfying jobs and lifestyles. Certain centers might work with special problems only—rehabilitation of the blind, deaf, or mentally retarded, for example. Certain centers also provide inpatient/outpatient care, day care, and 24-hour emergency, consultation, and educational services for problems related to mental health.

- *Migrant health programs* provide health services to migrant and seasonal farm workers who would not qualify for health services available to permanent residents of a particular state.
- *Neighborhood health centers* provide medical, dental, laboratory, radiological, and pharmaceutical services for people living in a particular geographic area within a city.
- *Health maintenance organizations (HMOs)* provide consumers with comprehensive health services, including hospitalization, office visits, preventive health checkups, and immunizations. Instead of the traditional pay-as-you-go system, consumers and/or their employers pay a fixed monthly fee that covers all these services, no matter how often they are used.
- *Health practitioners' offices* employ health professionals of various kinds, depending on the size of the practice and the patients who are being served. Some practitioners work alone in private practice, while others share office space and services in a group practice. Practitioners who commonly operate their own offices include medical and osteopathic physicians, dentists, chiropractors, podiatrists, optometrists, psychologists, dietitians, nutritionists, and veterinarians.
- *Voluntary health agencies* at the national, state, and local levels are concerned with specific health problems or health services. Some of their activities include raising funds for medical research, alerting the public to specific health problems, providing health education programs, and making health services more available at the community level. The American Cancer Society, American Heart Association, and National Foundation–March of Dimes are examples of voluntary health agencies.
- *Professional health associations* at the national, state, and local levels represent the members of a particular health profession

or of a particular type of health facility such as an association of hospitals or community health centers. Their activities often include improving the professional education of their members, establishing standards of practice or operations for their fields, and carrying out research of interest to their members. The American Medical Association, American Hospital Association, American Dietetic Association, and the National Association of Community Health Centers are some examples.

Government Health-Related Activities. At the federal, state, and local levels, the government offers numerous opportunities for health professionals. State and local governments operate health departments that help to control the spread of communicable disease, safeguard the purity of food and water supplies, and promote health education and health measures such as inoculations. At the federal level the U.S. Department of Health and Human Services' Public Health Service (PHS) is concerned with the health of all citizens.

Other branches of the government also offer opportunities for health-related employment. The U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) enforces standards related to job health and safety. The U.S. Department of Agriculture's state-sponsored programs ensure that meat, poultry, and eggs are disease-free and meet sanitary conditions. The U.S. Army, Navy, and Air Force and the Veterans Administration offer employment opportunities in practically every health occupation described in this book.

Industrial Health Care Employment. Industries not only manufacture prescription drugs and numerous over-the-counter medications but also produce common household health supplies as well as supplies used by hospitals and other health facilities. Medical devices such as hearing aids, cardiac pacemakers, artificial limbs, and braces are made by industry, as is the sophisticated diagnostic and treatment equipment used in health care today. In addition to producing such items, *industrial health care* employs thousands of people in research and development to discover new health products and technology.

Many large corporations have started health clinics manned by health professionals within their own companies. Their employees can receive immediate, in-house health care, and health checkups. Occupational health and safety of workers is a vital concern, and industry employs special health personnel to ensure that employees will not be exposed to unnecessary job hazards.

Employment Opportunities

Health care continually moves in new and different directions. This movement may alter what health workers will be doing, where they will be working, and how many will be employed in a particular occupation. Opportunities may expand in some areas and diminish in others, as has already happened in the case of many careers and will continue to happen as technology and the population change.

No one can predict with absolute certainty the employment outlook for a particular career. The following discussion of current trends gives some clues as to where one might find especially good opportunities today and in the future.

Changing Opportunities from New Technology

Advances in technology are frequently responsible for changes in career opportunities. Research is conducted constantly to discover methods of preventing disease and improving ways to diagnose and treat illness. This often results in the development and introduction of a complex machine or a sophisticated medical technique into health care. When this happens, health workers must be trained to operate the machine or to perform the technique correctly and safely.

The first persons selected for training are usually people who are already employed in health and work in a related area. They receive on-the-job training. However, as a new service becomes better known and is widely used by hospitals and other health facilities, more workers are needed. On-the-job training is often

no longer practical, and formal education programs in hospitals or colleges are started. Qualified students—not just health care workers—then have the opportunity for training. As the number of these newly trained workers increases, a separate and distinct occupation may emerge.

New Opportunities Through Expanded Functions of Some Health Workers

People in several health professions that require additional training and knowledge have been certified or licensed to perform many tasks that were previously done only by a physician or dentist. Some examples include the dental hygienist, the nurse practitioner, and the physician assistant. These professions are described in later chapters in more detail.

Opportunities in Rural and Inner-City Communities

In some parts of the country new health workers are finding it difficult to obtain jobs, while in other places communities cannot find enough workers to fill existing health care jobs. This national problem is often referred to as the *maldistribution of health personnel*. Health care workers are not distributed according to the population or health needs in many geographic areas. Overpopulated inner-city areas and underpopulated rural areas are hardest hit by this maldistribution.

In 1973, 140 rural counties were without a practicing physician. In the poverty areas of Chicago, there were 26 physicians for 100,000 residents, while in its more affluent areas there were 210 physicians for every 100,000 people. There is now an overall surplus of doctors, but some rural areas are still without adequate health care. Shortage areas need health professionals of all kinds. This might mean relocation to find the best future opportunities.

Primary Care

Most Americans need *primary health care* that focuses on prevention, early detection and treatment, and continued overall

responsibility for the patient. Primary care can often reduce health costs, since it is generally easier and cheaper to prevent problems or treat them in their earliest stages. Although the number of *primary care physicians* is growing, physicians who practice this kind of basic medicine are still outnumbered 3 to 1 by doctors who specialize in other fields. Primary care services should become increasingly available. Medical schools are encouraging students to go into primary care practice by emphasizing its importance and by exposing students to primary care earlier in their training.

Primary care is recognized as an official medical specialty under the name of *family practitioner*—one who delivers comprehensive, primary health care services for all family members. This increased emphasis on primary care affects not only the career of the physician but also most other health workers who assist or support the physician. The places in which people work are also affected. Facilities that emphasize primary care, such as HMOs and neighborhood health centers, will probably increase in number.

Expanding Opportunities in Outpatient Health Facilities

In 1978 the United States spent \$39 billion on health care. Twelve years later the figure was more than \$139 billion. In 2000, the figure rose to \$1 trillion. Containing costs will be perhaps the most important priority of the health field during the coming years. Because the cost of inpatient care in hospitals and nursing homes represents a large part of the nation's health care bill, new strategies have been launched to keep this cost down. Outpatient alternatives to hospitals or nursing homes are becoming successful. Home care services now enable many ill or aged people to remain in their own homes rather than live as patients in nursing homes. With a growing elderly population, home care services should become increasingly more important, and more workers will be needed to deliver these services.

Ambulatory or "walk-in" patient care in private practitioners' offices, hospital outpatient departments, community health centers, or other health facilities is helping to reduce hospitaliza-

tion. In the past, many medical procedures, including certain diagnostic tests and simple surgery, were done only on an inpatient hospital basis. Now these same procedures are safely and routinely performed on an outpatient basis in an office setting. This greater emphasis on ambulatory care may shift employment opportunities from hospitals to other kinds of health facilities. (See Chapter 2 for details on ambulatory facilities.)

Opportunities for Women and Minorities

The number of women and minorities is increasing in professions where these groups have been traditionally underrepresented, such as dentistry, veterinary medicine, optometry, podiatry, and health services administration. Congress, federal and state agencies, and professional associations in the health field are making special efforts to create new educational and professional opportunities for women and minorities in these fields. As was discussed in Chapter 5, the U.S. Department of Health and Human Services has addressed the need to increase the quality of health services by recommending that an increased proportion of all degrees be awarded to members of underrepresented racial and ethnic groups (*Healthy People 2010*).

The trends discussed here are not the only ones in health care today, but the discussion may make you more aware of the dynamics of the health field. So while you look into your future as a health worker, watch the health care system carefully. Be alert to changes and advances reported in the media. They may affect how and where you become involved in the health field and may help to guide your future.

Health Careers: Something for Everyone

The health field, perhaps more than any other career area, offers wide-ranging opportunities to match almost any interest.

Do you like to work with your hands? Dental technicians, optical mechanics, biomedical equipment technicians, prosthetists, and many other health professionals work with their hands.

Are you interested in working with machines? Respiratory therapists, electroencephalograph (EEG) technologists, and radiologic technologists are a few of the professionals who work with patients and medical machines.

Are you fascinated by photography or the fine arts? Art, music, or dance therapist or biological photographer are among the health careers in which you can use these talents.

Do you enjoy working with people? Nursing, medicine, dentistry, dietetics, optometry, social work, rehabilitation, and mental health are some health career areas that will give you the opportunity to work with and help people of all ages.

The careers just mentioned only begin to enumerate the possibilities. Health careers do offer something for everyone, but too often students say “no” to health careers simply because they do not have the facts. Some common assumptions students make when talking about health careers include such statements as:

“I couldn’t work around sick people in a hospital. That’s depressing. Besides, I can’t stand the sight of blood.”

A health career does not automatically mean a hospital job or care of the sick. Health careers have many facets. You can work in health care in research, health planning and administration, health education, disease prevention, environmental protection, and other important areas. Jobs are not just in hospitals. Private doctors’ offices, schools, government, industry, and many other places also need and employ health workers.

But don’t judge hospital work until you try it, either as a hospital volunteer or as a part-time employee. You may discover by working there and observing trained health professionals that you too can learn to accept the less pleasant parts of helping people get well. You will also find that even in hospitals many jobs are “behind-the-scenes,” with little or no direct contact with patients.

“You need science and math for health careers. That’s not for me.”

Science and mathematics are required for some health care jobs, but many others do not emphasize these subjects. Health education, social services, and mental health are just a few areas where psychology, social studies, and other subjects are stressed. But even when science and math are needed, different levels of skills are required. Some occupations such as optometrist and scientist require in-depth knowledge, while many other careers require just good basic skills and working knowledge of science and math.

“Training takes too long.”

Some careers do take 7 or more years of preparation. Most, however, require only 2 to 4 years’ preparation—not a very big investment considering that most people work more than 40 years in their lifetime.

“Training costs too much.”

In one sense, the cost of training is only relative. It must be balanced against what one can earn. Figures show that lifetime earnings generally increase with years of education. On the other hand, if you don’t think you can afford training, you are not alone. Most students today need and can find financial aid for training.

“Training is too hard.”

Don’t sell yourself short. Many students who felt the same way are now working as doctors, nurses, therapists, technologists, or other health professionals. If you fear training may be too hard for you, then think twice. A change of attitude, a special remedial program, or additional study may be all you need to succeed. Most community colleges and educational centers offer the special studies needed to prepare you for education in a health career.

Each year many interested, qualified students give up on a health career simply because they have not explored *alternative choices* when their first career choice is not possible. A prime example is the aspiring physician who is not admitted to a medical or an osteopathic school and drops out of the health field entirely.

The health field is vast; in it you will find many related careers where you can contribute and find personal satisfaction. Your talents are definitely needed in the health field.

Exploring Health Careers

Career exploration can be a learning experience as you make new discoveries about the world of work and yourself. The reality of the work world is always different from what you learn in school or from research in books. One good way to gain firsthand information is to visit several facilities. Make appointments and visit several departments within the facilities. Compare different types of facilities and what people with the same job titles are doing in each one.

If you have a particular interest, set up interviews with a health worker in that discipline. This is usually very rewarding for you both. Most health professionals enjoy talking to students and answering questions about their particular fields.

Visit laboratories, both private and hospital-based. Visit practitioners in private practice and those in salaried positions. Learn all you can about community-based programs and special services offered by clinics and hospitals.

Ask about the philosophy of each facility you visit. Does it provide in-service education for its employees and set up continuing education programs? Does it subscribe to patient education concepts? What are the general amenities offered workers in different kinds of facilities?

Before you go exploring, do your homework. Visit the Web sites of professional organizations listed in certain chapters of this book. Do some more reading in the library. Be able to ask pertinent questions that will help you make decisions.

Visit schools that offer majors in the health services. You can find out much about the professions by talking to students and instructors and by spending some time on campus and possibly in the classes (most schools permit such visits).

Some professions stipulate that students have some experience in the field before they are considered for admission to an academic program. This can be obtained by summer work, part-time jobs, or volunteer work in a facility. The firsthand experience you gain from such an endeavor will not only help you to make decisions about your career, but may also help get you into the school of your choice.

While you explore, keep an open mind. Investigate many careers, not just those with which you are familiar. The more information you have, the easier your career decisions will be.

Selecting a School

Next to choosing a career, selecting the right school for training is the most important career decision you will have to make. As you read the job requirements for the many careers detailed in Part II of this book, you will discover that health career training is available in many kinds of schools: two-year and four-year colleges and universities; technical institutes; medical, dental, and other professional schools; hospitals; private, vocational, and trade schools; and the military. The secret to selecting the right school lies in answering one important question: Will the school you are interested in prepare you for the career you want? Before you seek the answer to this question, you should understand three basic terms related to employment in the health field: licensure, professional certification, and professional registration.

Licensure

Before you can work in many health professions, a state license is required. The qualifications for licensure vary. In general a student must graduate from a school whose program is approved by the state licensing agency, then prove that he or she is qualified to give health services by passing a special licensing examination. *Licensure* is the state's way of protecting the public from unqualified health practitioners.

The health professions that are licensed vary with each state. Some professions, such as registered nurse, practical nurse, physician, dentist, optometrist, podiatrist, pharmacist, social worker, and veterinarian, are licensed in all states. Individual state licensing agencies also vary. The state's Education Department, Department of Higher Education, and Department of Health are usually the responsible agencies. Licenses may also be granted jointly by a

state agency and a specialty board such as the Board of Nursing or the Board of Dentistry.

Professional Certification

Professional certification ensures that health professionals meet established levels of competency. Certification is granted by national health professionals' organizations, not by the individual states, so it has national recognition. In health professions in which there is no state licensure, professional certification may be required for employment. But even when certification is not required, it is a strong asset. Most employers prefer to hire certified professionals, and in a tight job market, certification may be the key to getting a job.

In general, to qualify for certification, a student must first complete a program of training recognized by the profession. Usually this means graduating from a school whose program is accredited (approved) by the organization. Some organizations accredit programs jointly with the AMA. After graduation the student must pass a special certification examination.

Professional Registration

Technically, *professional registration* means the listing of certified health professionals on an official roster kept by a state agency or health professionals' organization. In practical terms, some health professionals' organizations use the term *registration* interchangeably with *certification*.

Using This Book to Select and Plan a Health Career

Part II of this book describes in detail the requirements, including registration, licensure, and certification, of the well-known health professions. In addition to information about requirements, each of the following chapters describes the work and the work envi-

ronment, employment opportunities and trends, and earnings for a specific category of patient care career. The chapters also discuss related occupations and additional sources of information about the particular career. Taken together, the career descriptions present a practical, detailed “road map” of the vast health care field.

Appendix B has an extensive list of places to begin collecting information on careers and job opportunities. Appendix C will help you with job hunting, writing resumés, and successful interviewing.



Part Two



Health Professions Involving Patient Care

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Objectives

Objectives listed below are for all chapters in Part Two. After studying the chapters in this part the student should be able to:

- 1.** Describe the responsibilities and work of each profession.
- 2.** Classify the types of specialties in each profession.
- 3.** Discuss the environment in which the work takes place.
- 4.** Identify any adjunct personnel who assist the professionals with their work.
- 5.** Compare and contrast the following factors among the professions: educational requirements, employment trends, opportunities for advancement, salary potential, and career ladders.
- 6.** Describe the differences in licensing, certification, and registration for careers of interest.
- 7.** Identify the professionals who do similar tasks or have similar responsibilities.
- 8.** Discuss the advantages of the national organizations to which professionals belong.
- 9.** Explain the concept and functions of interdisciplinary teams.

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Chapter 7



Medicine

Key Terms

M.D.	Neurologists
D.O.	Gynecologists
Allopathic	Obstetricians
Surgeons	Pathologists
Psychiatrists	Emergency medicine
Radiologists	Allergists
Pediatricians	Otolaryngologists
Ophthalmologists	Preventive medicine/occupational medicine
Internists	Solo practitioners
Dermatologists	Group practice
Anesthesiologists	Cost of training
Cardiologists	
Primary care physician	

Doctors: The Perceptions

Although it is only one of many career paths available to those with the interest and aptitude for a career involving patient care, the profession of physician is one that most readily comes to mind when one thinks of medicine. The title “Dr.” traditionally inspires respect—and perhaps envy. Media portrayals through the years have contributed to a popular perception of doctors as public servants of rare intelligence, compassion, and skill; encounters with the medical system have left some consumers convinced that doctors have feet of clay that are shod in gold-plated boots.

Though public perceptions of physicians will undoubtedly persist despite demonstrations of their inapplicability, individuals approaching a career choice should be guided by realities rather than perceptions. The cost of training is a serious consideration for would-be physicians, and, like other health care professionals, physicians must adjust to changes in the health care system, some of which are potentially constraining to autonomy and earning power.

Doctors: The Realities

Work Description

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

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

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

D.O.'s are more likely to be primary care providers than are *M.D.*'s, although they can be found in all specialties. More than half of all *D.O.*'s practice general or family medicine, general internal medicine, or general pediatrics. Common specialties for *D.O.*'s include emergency medicine, anesthesiology, obstetrics and gynecology, psychiatry, and surgery.

Dramatic advances in medical technology have expanded the scope of the physician's field. Liver and kidney transplants, laser surgery, and ultrasound and magnetic resonance imaging are but a few of these new technologies. Some are opening entirely new

areas of medical practice; others are replacing traditional treatment methods.

The emphasis on technology has implications for the way physicians are trained and the way they practice medicine. High-technology medicine requires extensive skills and training. Its dominant role in U.S. medical care underlies the system of specialty medicine. The cost of technology is largely responsible for making the hospital the site of the most advanced medical care. Only hospitals and very large clinics or group medical practices can afford to purchase the most costly equipment. It is beyond the means of individual physicians or small groups.

The shift from fee-for-service medicine to managed care has altered the practice environment. Examples of managed care systems that set guidelines for medical practice—limiting the kinds of tests physicians may order, for example—include HMOs, PPOs, and various “gatekeeping” schemes. The managed care concept has become widespread, and physicians are subject to more constraints in exercising their professional judgment than has traditionally been the case.

Some commonly encountered types of specialties and their primary focus of practice are described in the following paragraphs.

Surgeons operate so as to treat disease, repair injury, correct deformities, and improve the general health of the patient. Surgeons examine a patient first to determine whether an operation is needed, then choose the best way to operate. A medical history of the patient is most important; this includes information related to past surgeries and potential allergies to drugs or anesthesia.

General surgeons perform many types of surgeries. Neurologic surgeons specialize in surgery of the brain, spinal cord, and nervous system. The neurologic surgeon has a major role in treatment of head and spinal injuries caused by accidents. Orthopedic surgeons are specialists in the repair of bones and joints. Orthopedic surgeons may also treat patients without surgery by applying casts or braces, or by formulating an exercise program including physiotherapy. Plastic surgeons repair malformed or injured parts of the body. Plastic surgeons have a major role in the physiologic and psychological repair of injuries from accidents. Thoracic surgeons perform surgery in the chest cavity—for instance, lung and heart surgery.

Psychiatrists help patients recover their mental health. The psychiatrist gathers and analyzes data on the patient’s medical and

mental history, symptoms, and interaction with the family and society. The psychiatrist diagnoses mental disorders and then formulates a treatment plan. Examples of conditions that are treated by the psychiatrist are anxiety, depression, paranoia, and schizophrenia.

Radiologists diagnose and treat illness by the use of x rays and radioactive materials. Radiologists treat tumors and other growths with radiation and may inject radioactive materials into the body to make internal organs or structures visible on x ray. Radiologists are usually involved in one of three areas of specialty: radiation therapy, diagnostic radiology, or nuclear medicine. Nuclear medicine is a new specialty that involves tests using nuclear isotopes. This type of medicine permits physicians to see organs deep within the body from a different perspective than x rays provide.

Pediatricians care for children from birth to adolescence. They check the health of children, prescribe and give medicine, vaccinate children against disease, and serve as a reference for parents on medical questions about their children.

Ophthalmologists treat diseases and injuries of the eye. They examine eyes and prescribe corrective lenses, diagnose diseases, perform surgery when necessary, or recommend exercises to strengthen the eye muscles.

Physicians who specialize in internal medicine deal with the internal organs of the body. *Internists* may treat conditions of the lungs, blood, kidneys, heart, and other areas and organs of the body.

Dermatologists treat infections, growths, and injuries related to the skin. They prescribe medicine or treatments and remove growths, cysts, or birthmarks as medically indicated.

Anesthesiologists use drugs and gases to render patients unconscious during surgery. They obtain a detailed history from the patient and then make a decision concerning the type and amount of anesthesia to use during surgery. There are several types of anesthesia available, and anesthesiologists use them singly or in combination according to their judgment. During surgery, the anesthesiologist monitors the progress of the patient and informs the surgeon if any difficulties arise.

Cardiologists treat heart disease. They use many techniques to determine how the patient's heart is functioning. X rays and electrocardiograms are primary diagnostic tools. The cardiologist prescribes treatment and recommends diet and exercise changes for patients. Cardiovascular surgery of the heart and blood vessels is a subspecialty of cardiology.

The *primary care physician* is involved with the care of the total patient and is prepared educationally to handle most types of illnesses. The recent popularity of the family physician indicates a move away from specialty areas back toward treating the whole patient—and, in many cases, whole families. Primary care physicians are involved in six basic areas: internal medicine, obstetrics and gynecology, surgery, psychiatry, pediatrics, and community medicine. This wide scope of training makes the primary care physician very knowledgeable in treating the whole patient preventively and in coordinating specialty care if necessary.

Neurologists treat disorders of the central nervous system and order tests necessary to detect diseases. They prescribe medicine and treatment based on the neurological diagnosis.

Obstetricians and *gynecologists* are involved in the health care and maintenance of the reproductive system of women. These physicians treat women before and after childbirth and examine women regularly for any abnormal developments or growths in the reproductive system. *Obstetricians* work with women throughout their pregnancies, deliver infants, and care for the mothers after the delivery.

Pathologists study the characteristics, causes, and progression of diseases. They order and perform laboratory tests. They may perform autopsies to determine cause of death. Many pathologists work in a specialty area such as blood banks or clinical chemistry, and most are actively involved in research.

Emergency medicine is a relatively new specialty. Physicians in this field work specifically in emergency rooms, where they treat acute illnesses and emergency situations. Trauma treatment is a specialized area within emergency medicine, and physicians in this area are knowledgeable in dealing with all kinds of acute illness.

Allergists treat conditions and illnesses caused by allergies or related to the immune system. The allergist is actively involved in ordering tests and evaluating results. They also treat patients who have undergone transplants of organs.

Otolaryngologists are specialists in the treatment of conditions or diseases of the ear, nose, and throat. They may treat patients who have lost the ability to speak or hear. They may perform related surgeries.

Preventive medicine is a specialty that includes *occupational medicine*, public health, and general preventive treatments. Physicians in this field may work as health officers in infectious dis-

ease control or in treatment of illnesses associated with industry. Preventive medicine is a new area of treatment that is rapidly gaining popularity with patients because it helps to decrease the overall cost of medical care.

Some medical specialties also have subspecialties. To become recognized as a specialist, a physician must gain certification from the specific accrediting body for that specialty.

Work Environment

Many physicians work long, irregular hours. According to the most recent data, more than one-third of all full-time physicians work 60 hours or more per week. They must travel frequently between office and hospital to care for their patients. Increasingly, physicians practice in groups or health care organizations that provide back-up coverage and allow for more time off. These physicians often work as part of a team coordinating care for a population of patients; they are less independent than *solo practitioners* of the past. Physicians who are on-call deal with many patients' concerns over the phone, and they may make emergency visits to hospitals or nursing homes.

Employment Opportunities

Physicians (M.D.'s and D.O.'s) hold about 598,000 jobs, according to most recent data. About 7 out of 10 are in office-based practice, including clinics and HMOs; about 2 out of 10 are employed by hospitals. Others practice in the federal government, with most working in Department of Veterans Affairs hospitals and clinics or in the Public Health Service of the Department of Health and Human Services.

A growing number of physicians are partners or salaried employees of *group practices*. Organized as clinics or as groups of physicians, medical groups can afford expensive medical equipment and realize other business advantages. Also, hospitals are integrating physician practices into health care networks that provide a continuum of care both inside and outside the hospital setting.

The New England and middle Atlantic states have the highest ratio of physicians to population; the south central states have the

lowest ratio. 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 educational centers.

Educational and Legal Requirements

It takes many years of education and training to become a physician: four years of undergraduate school, four years of medical school, and three to eight years of internship and residency, depending on the specialty selected. A few medical schools offer a combined undergraduate and medical school program that lasts six years instead of the customary eight 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 choose to volunteer at local hospitals or clinics to gain practical experience in the health professions.

The minimum educational requirement for entry into a medical or osteopathic school is three years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. There are 144 medical schools in the United States—125 teach allopathic medicine and award a Doctor of Medicine (M.D.) degree; 19 teach osteopathic medicine and award a Doctor of Osteopathic Medicine (D.O.) degree. The quest to gain acceptance to medical school is very competitive. Applicants must submit transcripts, scores from the Medical College Admission Test, and letters of recommendation. Schools also consider 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 two 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 illness. During the last two years of medical school, students work with patients under the supervision of experienced physicians in hospitals and clinics to learn acute, chronic, preventive, and reha-

bilitative 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 before entering a residency that may last two to six years. Physicians may benefit from residencies in managed care settings by gaining experience with this increasingly common type of medical practice.

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 one to seven years of graduate medical education. Although physicians licensed in one state can usually get a license to practice in another state without further examination, some states limit reciprocity. Graduates of foreign medical schools can usually 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 seven years—depending on the specialty—in residency training. A final examination immediately after residency, or after one or two years of practice, is also necessary for board certification by the American Board of Medical Specialists (ABMS) or the American Osteopathic Association (AOA). There are 24 specialty boards, ranging from allergy and immunology to urology. For certification in a subspecialty, physicians usually need another one to two years of residency.

Physicians who want to teach or conduct research may take graduate work leading to a master's degree or Ph.D. in a field such as biochemistry or microbiology, or spend one year or more in a fellowship devoted to research and advanced clinical training in a special area.

A physician's *training is costly*, and whereas education costs have increased, student financial assistance has not. More than 80 percent of medical students borrow money to cover their expenses. While education costs have increased, student financial assistance has not. Scholarships have become harder to find. Loans

are available, but subsidies to reduce interest rates are limited. Out-of-state tuition fees at primary care schools average about \$25,000 per year. Major medical schools average \$28,000 to \$30,000. The range of tuition for out-of-state medical students goes from a low of \$17,000 for state schools to \$30,000 for private schools.

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 must also have a good bedside manner, emotional stability, and the ability to make decisions in emergencies. Prospective physicians must be willing to study throughout their careers to keep up with medical advances. They will also need to be flexible to respond to the changing demands of a rapidly evolving health care system.

Employment Trends

Employment of physicians will grow faster than the average for all occupations through the year 2008 due to continued expansion of the health care industries. The growing and aging population will drive overall growth in the demand for physician services. In addition, new technologies will permit more intensive care: Physicians can do more tests, perform more procedures, and treat conditions previously regarded as untreatable.

Although job prospects may be better for primary care physicians such as general and family practitioners, general pediatricians, and general internists, a substantial number of jobs for specialists will also be created in response to patient demand for access to specialty care.

The number of physicians in training has leveled off and is likely to decrease over the next few years, alleviating the effects of any physician oversupply. However, future physicians may be more likely to work fewer hours, retire earlier, have lower earnings, or have to practice in underserved areas. Opportunities should be good in some rural and low-income areas, because some physicians find these areas unattractive due to lower earnings potential, isolation from medical colleagues, or other reasons.

Unlike their predecessors, newly trained physicians face radically different choices of where and how to practice. New physi-

cians are much less likely to enter solo practice and more likely to take salaried jobs in group medical practices, clinics, and health care networks.

Earnings

Physicians have among the highest earnings of any occupation. According to the American Medical Association, median income, after expenses, for allopathic physicians was about \$160,000 in recent years. The middle 50 percent earned between \$120,000 and \$240,000 per year. Self-employed physicians—those who own or are part-owners of their medical practice—had higher median incomes than salaried physicians. Earnings vary according to number of years in practice; geographic region; hours worked; and skill, personality, and professional reputation. As shown in Table 1, the median income of allopathic physicians, after expenses, also varies by specialty.

Table 1 Median Net Income of M.D.'s After Expenses, 1997

All physicians	\$164,000
Surgery	240,000
Radiology	230,000
Anesthesiology	210,000
Obstetrics/gynecology	200,000
Emergency medicine	184,000
Pathology	184,000
General internal medicine	140,000
General/Family practice	130,000
Psychiatry	130,000
Pediatrics	120,000

SOURCE: American Medical Association.

Average salaries of medical residents ranged from about \$34,100 for those in their first year of residency to about \$42,100

for those in their sixth year, according to the most recent statistics from the Association of American Medical Colleges.

Related Occupations

Physicians work to prevent, diagnose, and treat diseases, disorders, and injuries. Professionals in other occupations that require similar kinds of skill and critical judgment include audiologists, chiropractors, dentists, optometrists, podiatrists, speech pathologists, veterinarians, nursing practitioners, and physician assistants.

Additional Information

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

- Association of American Medical Colleges, Section for Student Services, 2450 N St. NW., Washington, DC 20037-1131. Internet: <http://www.aamc.org>.

For a list of osteopathic medical schools, 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 20815-7321. Internet: <http://www.aacom.org>.

For general information on physicians, contact:

- American Medical Association, Department of Communications and Public Relations, 515 N. State St., Chicago, IL 60610. Internet: <http://www.ama-assn.org>.
- American Osteopathic Association, Department of Public Relations, 142 East Ontario St., Chicago, IL 60611. Internet: <http://www.aoa-net.org>.

Information on federal government scholarships and loans is available from the directors of student financial aid at schools of allopathic and osteopathic medicine.

Information on licensing is available from state boards of examiners.

Chapter 8



Dentistry

Key Terms

Orthodontics	Endodontics
Oral surgery	Public health dentistry
Pedodontics	Oral pathology
Periodontics	Dental hygienists
Prosthodontics	Dental assistants

Dentists

Work Description

Dentists diagnose, prevent, and treat teeth and tissue problems. They remove decay, fill cavities, examine x rays, place protective plastic sealants on children's teeth, straighten teeth, and repair fractured teeth. They also perform corrective surgery on gums and supporting bones to treat gum diseases. Dentists extract teeth and make models and measurements for dentures to replace missing teeth. They provide instruction on diet, brushing, flossing, the use of fluorides, and other aspects of dental care as well. They also administer anesthetics and write prescriptions for antibiotics and other medications.

Dentists use a variety of equipment, including x-ray machines, drills, and instruments such as mouth mirrors, probes, forceps, brushes, and scalpels. They also wear masks, gloves, and safety glasses to protect themselves and their patients from infectious diseases.

Most dentists are general practitioners who handle a wide variety of dental needs. About 15 percent practice in one of the eight specialty areas recognized by the American Dental Association. *Orthodontists*, the largest group of specialists, straighten teeth. The next largest group, *oral and maxillofacial surgeons*, operate on the mouth and jaws. The remainder specialize in *pedodontics* (dentistry for children), *periodontics* (treating the gums), *prosthodontics* (making artificial teeth or dentures), *endodontics* (root canal therapy), *public health dentistry* (community dental health), and *oral pathology* (diseases of the mouth).

Today's dentist is involved not only with the treatment of the gums and teeth but also with patients' general health. Many dentists discover symptoms that call for a referral to a physician.

Dentists in private practice oversee a variety of administrative tasks, including bookkeeping and buying equipment and supplies. They may employ and supervise dental hygienists, dental assistants, dental laboratory technicians, and receptionists.

Technological advances in dentistry affect the materials and techniques that dentists employ in their work. For example, dentists now use new composite materials to repair fractured or disfigured teeth. As new technologies are proven and adopted, the nature of dentistry will continue to change.

Work Environment

Most dental offices are open five days per week, and some dentists have evening hours. Dentists who have offices in retail stores or work for franchised dental outlets may work weekends as well.

Dentists usually work about 42 hours per week, although some spend more than 45 hours per week in the office. Dentists often work fewer hours as they grow older, and a considerable number continue in part-time practice well beyond the usual retirement age.

Important health safeguards for dentists include strict adherence to proper radiologic procedures, compliance with recommended aseptic techniques, including the latest safety precautions, and use of appropriate protective devices such as masks, gloves, and safety glasses. These measures address their own safety as well as the safety of their patients.

Employment Opportunities

Most recently, dentists held about 152,000 jobs. Almost all dentists are in private practice. Private practice, however, includes a wide variety of work settings and payment systems. Some dentists work in shopping malls; others contract with individual companies to provide dental services to a firm's employees. A growing number of dental practices contract their services to HMOs.

Of the dentists outside of private practice, about half do research, teach, or hold positions in dental schools. Others work in hospitals and clinics, or are dental interns, residents, or other advanced education students. About 2,000 civilian dentists work

in the federal service, predominantly in the hospitals and clinics of the Veterans Administration and the U.S. Public Health Service.

The numbers of women and minority practitioners are growing. Approximately 30 percent of first-year students in dental schools are women and minorities. Of the more than 26,000 women practitioners, 35 percent are minorities, including 23.4 percent Asian, 5.7 percent black, and 4.9 percent Hispanic.

Educational and Legal Requirements

All 50 states and the District of Columbia require dentists to be licensed. To qualify for a license in most states, a candidate must graduate from a dental school approved by the Commission on Dental Accreditation and pass written and practical examinations. Currently, 17 states require dentists to obtain a specialty license before practicing as a specialist. Requirements include two to four years of graduate education and, in some cases, completion of a special state examination. Advanced education also is necessary in the other states, but the dental profession, not the state licensing authority, defines the specialist's practice. Most state licenses permit dentists to engage in both general and specialized practice. Dentists who want to teach or do research usually spend an additional two to five years in advanced dental training, in programs operated by dental schools, other institutions of higher education, or hospitals.

Dental schools require a minimum of two years of college-level pre dental education, which must include courses in both the sciences and humanities. However, the overwhelming majority of dental students have bachelor's degrees. Pre dental education emphasizes course work in the sciences.

All dental schools require applicants to take the Dental Admissions Test (DAT), and when selecting students they consider scores earned on the DAT along with the applicants' overall grade-point average (GPA), science course GPA, and information gathered through recommendations and interviews. Many state-supported dental schools give preference to state residents.

Dental school generally lasts four academic years. Studies begin with classroom instruction and laboratory work in basic sciences, including anatomy, microbiology, biochemistry, and physiology. Beginning courses in clinical sciences, including laboratory

techniques, also are provided at this time. During the last two years, the student gains practical experience by treating patients, usually in dental clinics, under the supervision of licensed dentists.

Most dental schools award the degree of Doctor of Dental Surgery (D.D.S.). An equivalent degree, Doctor of Dental Medicine (D.M.D.), is conferred by the rest.

Earning a dental degree is a costly process, but financial aid is available from the federal and state governments, health-related organizations, industry, and dental schools. Many dental students rely on student loans to finance their professional training.

Dentistry requires both manual skills and a high level of diagnostic ability. Dentists should have good visual memory, excellent judgment of space and shape, a high degree of manual dexterity, and scientific ability. Good business sense, self-discipline, and communication skills are helpful for success in private practice. High school and college students who want to become dentists are advised to take courses in biology, chemistry, health, and mathematics.

Dental school graduates typically launch their careers by working for established dentists on an associate basis for a year or two. This enables them to gain experience and save money to equip an office of their own. Most dentists, however, purchase an established practice or open a new practice immediately after graduation.

Each year a number of new graduates—currently about one-third—enroll in postgraduate training programs in approved hospitals or dental schools to prepare for a dental specialty.

Dentists who enter the armed forces are commissioned as captains in the Army and Air Force and as lieutenants in the Navy. Graduates of recognized dental schools are eligible for positions in the federal service and for commissions (equivalent to lieutenants in the Navy) in the U.S. Public Health Service.

Employment Trends

Employment of dentists is expected to grow slower than the average for all occupations through 2008. Although employment growth will provide some job opportunities, most jobs will result from the need to replace the large number of dentists projected to retire. Job prospects should be good if the number of dental school graduates does not grow significantly, thus keeping the supply of newly qualified dentists near current levels.

Demand for dental care should grow substantially through 2008. As members of the baby boom generation advance into middle age, a large number will need maintenance on complicated dental work, such as bridges. In addition, elderly people are more likely to retain their teeth than were their predecessors, so they will require much more care than in the past. The younger generation will continue to need preventive checkups despite treatments such as fluoridation of the water supply, which decreases the incidence of tooth decay.

Dental care will focus more on prevention, including teaching people how to care better for their teeth. Dentists will increasingly provide care that is aimed at preventing tooth loss—rather than just providing treatments, such as fillings. Improvements in dental technology will also allow dentists to provide more effective and less painful treatment to their patients.

Nevertheless, the employment of dentists is not expected to grow as rapidly as the demand for dental services. As their practices expand, dentists are likely to hire more dental hygienists and dental assistants to handle routine services.

Earnings

During the first year or two of practice, dentists often earn little more than the minimum needed to cover expenses, but their earnings usually rise rapidly as their practices develop. Specialists generally earn considerably more than general practitioners. The average annual income of salaried dentists in general practice was about \$129,030 in recent years. A relatively large proportion of dentists are self-employed. Like other business owners, these dentists must provide their own health insurance, life insurance, and retirement benefits.

The location of a dental practice has a large influence on the dentist's earnings. For example, in high-income urban areas, dental services are in great demand. However, a practice can be developed most quickly in small towns, where new dentists can become known easily and where they may face less competition from established practitioners. Although income in small towns may rise rapidly at first, over the long run the level of earnings, like the cost of living, may be lower than it is in larger communities.

Except for emergencies, dental work generally can be postponed. During periods of high unemployment and economic hardship, therefore, dentists tend to experience a reduction in the volume of work and thus lower earnings. However, insurance coverage somewhat dampens the impact of economic downturns on the demand for dental care. Currently, approximately 100 million people are covered under dental insurance plans.

Related Occupations

Dentists examine, diagnose, prevent, and treat various oral diseases and abnormalities. Others whose work involves personal contact and requires a long and rigorous period of scientific training include psychologists, optometrists, physicians, veterinarians, and podiatrists.

Additional Information

For information on dentistry as a career and a list of accredited dental schools, contact:

- American Dental Association, Commission on Dental Accreditation, 211 E. Chicago Ave., Chicago, IL 60611. Internet: <http://www.ada.org>.
- American Association of Dental Schools, 1625 Massachusetts Ave. NW., Washington, DC 20036. Internet: <http://www.aads.jhu.edu>.

The American Dental Association will also furnish a list of state boards of dental examiners. Persons interested in practicing dentistry should obtain the requirements for licensure from the board of dental examiners of the state in which they plan to work.

Prospective dental students should contact the office of student financial aid at the schools to which they apply for information on scholarships, grants, and loans, including federal financial aid.

Dental Hygienists

Work Description

Dental hygienists clean teeth and provide other preventive dental care; they also teach patients how to practice good oral hygiene. Hygienists examine patients' teeth and gums, recording the presence of diseases or abnormalities. They remove calculus, stains, and plaque from teeth; take and develop dental x rays; and apply cavity preventive agents such as fluorides and pit and fissure sealants. In some states, hygienists administer local anesthetics and anesthetic gas; place and carve filling materials, temporary fillings, and periodontal dressings; remove sutures; and smooth and polish metal restorations.

Dental hygienists also help patients develop and maintain good oral health. For example, they may explain the relationship between diet and oral health, inform patients how to select toothbrushes, and show patients how to brush and floss their teeth.

Dental hygienists use hand and rotary instruments, lasers, and ultrasonics to clean teeth; x-ray machines to take dental pictures; syringes with needles to administer local anesthetics; and models of teeth to explain oral hygiene.

The nature of the work may vary by practice setting. In schools, for example, hygienists may assist the dentist in examining children's teeth to determine the dental treatment required. Hygienists who have advanced training may teach or conduct research.

Work Environment

Dental hygienists usually work in clean, well-lighted offices. Important health safeguards for persons in this occupation include regular medical checkups, strict adherence to proper radiologic procedures, compliance with required infection control procedures, including the latest safety precautions, and use of appropriate protective devices when administering nitrous oxide/oxygen analgesia. The occupation is one of several covered by the Consumer-Patient Radiation Health and Safety Board, which sets uniform standards for the training and certification of individuals who perform medical and dental radiologic procedures.

Most hygienists work 30 to 35 hours per week in jobs that may include Saturday or evening hours. Flexible scheduling is a distinctive feature of this job.

Employment Opportunities

Most recently, dental hygienists held about 147,000 jobs. Because multiple job holding is common in this field, the number of jobs greatly exceeds the number of people at work in a given year. Dentists frequently hire hygienists to work only two or three days per week, so hygienists who want to work more hours often hold jobs in more than one practice.

While most dental hygienists are employed in dental offices, many also provide services in hospitals, health agencies, primary and secondary school systems, and private industry. There are opportunities abroad with the Peace Corps, the World Health Organization, and foreign governments.

Dental specialists, such as pediatric dentists, also frequently employ dental hygienists. They may work chairside with the dentist and participate in the business aspects of the practice.

The job opportunities in the dental hygiene field are as diverse as the settings. Depending on their educational background and experience, hygienists may work as clinical practitioners, educators, researchers, administrators, managers, program developers, consultants, or dental product salespeople.

There is a great deal of stability in the dental hygiene field; most hygienists have an average of more than six years in their current practice.

Educational and Legal Requirements

Dental hygienists must be licensed by the state in which they practice. To qualify for licensure, a candidate must graduate from an accredited dental hygiene school and pass both written and clinical examinations. The American Dental Association Joint Commission on National Dental Examinations administers the written examination accepted by all states and the District of Columbia. State or regional testing agencies administer the clinical examination. In addition, most states require an examination on legal aspects of

dental hygiene practice. Alabama allows candidates to take its examinations if they have been trained through a state-regulated on-the-job program in a dentist's office.

In 1999, the Commission on Dental Accreditation accredited about 250 programs in dental hygiene. Although some programs lead to a bachelor's degree, most grant an associate degree. Thirteen universities offer master's degree programs in dental hygiene or a related area.

An associate degree is sufficient for practice in a private dental office. A bachelor's or master's degree is usually required for research, teaching, or clinical practice in public or school health programs.

About half of the dental hygiene programs prefer applicants who have completed at least one year of college. However, requirements vary from school to school. Schools offer laboratory, clinical, and classroom instruction in subjects such as anatomy, physiology, chemistry, microbiology, pharmacology, nutrition, radiography, histology (the study of tissue structure), periodontology (the study of gum diseases), pathology, dental materials, clinical dental hygiene, and social and behavioral sciences.

People who want to become dental hygienists should enjoy working with others. The ability to put patients at ease is helpful; patients often are under stress. Personal neatness, cleanliness, and good health are important. Dental hygienists must have manual dexterity, because they use various dental instruments with little room for error within a patient's mouth. Among high school courses recommended for aspiring dental hygienists are biology, health, chemistry, psychology, speech, and mathematics.

Employment Trends

Employment of dental hygienists is expected to grow much faster than the average for all occupations through 2008, in response to increasing demand for dental care and the greater substitution of hygienists for services previously performed by dentists. Job prospects are expected to remain very good unless the number of dental hygienist program graduates grows much faster than it did during the last decade, and results in a much larger pool of qualified applicants.

Population growth and greater retention of natural teeth will stimulate demand for dental hygienists. Older dentists, who are less likely to employ dental hygienists, will leave and be replaced by recent graduates, who are more likely to do so. In addition, as dentists' workloads increase, they are expected to hire more hygienists to perform preventive dental care such as cleaning, allowing dentists to devote their own time to more profitable procedures.

Earnings

According to the latest data, median hourly earnings of dental hygienists were \$24.68 in recent years. The middle 50 percent earned between \$20.46 and \$29.72 per hour. The lowest 10 percent earned less than \$15.53 and the highest 10 percent earned more than \$35.39 per hour.

Earnings vary by geographic location, employment setting, and years of experience. Dental hygienists who work in private dental offices may be paid on an hourly, daily, salary, or commission basis.

Fringe benefits vary substantially by practice setting and may be contingent on full-time employment. Dental hygienists who work for school systems, public health agencies, the federal government, or state agencies have the same benefits as other workers in these organizations.

Related Occupations

Other occupations supporting health practitioners in an office setting include dental assistants, ophthalmic medical assistants, podiatric assistants, office nurses, medical assistants, physician assistants, and occupational therapy assistants.

Additional Information

For information on a career in dental hygiene and the educational requirements to enter this occupation, contact:

- Division of Professional Development, American Dental Hygienists' Association, 444 N. Michigan Ave., Suite 3400, Chicago, IL 60611. Internet: <http://www.adha.org>.

- Commission on Dental Accreditation, American Dental Association, 211 E. Chicago Ave., Suite 1814, Chicago, IL 60611. Internet: <http://www.ada.org>.

The state board of dental examiners in each state can supply information on licensing requirements.

It is important to contact the dental hygiene program in which you are interested at least a full year prior to the desired admission date (nearly always a fall semester) for an application and specific admission requirements.

Dental Assistants

Work Description

Dental assistants perform a variety of patient care, office, and laboratory duties. They work at chairside as dentists examine and treat patients. They make patients as comfortable as possible in the dental chair, prepare them for treatment, and obtain dental records. Assistants hand instruments and materials to dentists, and keep patients' mouths dry and clear by using suction or other devices. They also sterilize and disinfect instruments and equipment, prepare tray setups for dental procedures, and instruct patients on postoperative and general oral health care.

Some dental assistants prepare materials for making impressions and restorations, expose radiographs, and process dental x-ray film as directed by the dentist. State law determines which clinical tasks a dental assistant may perform, but in most states they may remove sutures, apply anesthetic and caries-preventive agents to the teeth and oral tissue, remove excess cement used in the filling process, and place rubber dams on the teeth to isolate them for individual treatment.

Those with laboratory duties make casts of the teeth and mouth from impressions taken by dentists, clean and polish removable appliances, and make temporary crowns. Dental assistants with office duties arrange and confirm appointments, receive patients, keep treatment records, send bills, receive payments, and order dental supplies and materials. Dental assistants should not be confused with dental hygienists, who are licensed to perform a wider variety of clinical tasks.

Work Environment

Dental assistants work in a well-lighted, clean environment. Their work area is usually near the dental chair, so they can arrange instruments, materials, and medication and hand them to the dentist when needed. Dental assistants wear gloves and masks to protect themselves from infectious diseases. Following safety procedures minimizes the risks of handling radiographic equipment.

Most dental assistants have a 32- to 40-hour workweek, which may include work on Saturdays or evenings.

Educational Requirements

Most assistants learn their skills on the job, though some are trained in dental assisting programs offered by community and junior colleges, trade schools, and technical institutes. Some assistants are trained in armed forces schools. Assistants must be a dentist's "third hand," and dentists therefore look for people who are reliable, can work well with others, and have manual dexterity. High school students interested in careers as dental assistants should take courses in biology, chemistry, health, typing, and office practices.

The American Dental Association's Commission on Dental Accreditation approved 251 formal training programs in 1999. Accredited dental assisting programs include classroom, laboratory, and preclinical instruction in dental assisting skills and related theory. In addition, students gain practical experience in dental schools, clinics, or dental offices. Most programs take one year or less to complete and lead to a certificate or diploma. Two-year programs offered in community and junior colleges lead to an associate's degree. All programs require a high school diploma or its equivalent, and some require typing or a science course for admission. Some private vocational schools offer four- to six-month courses in dental assisting, but these are not accredited by the Commission on Dental Accreditation.

Certification, available through the Dental Assisting National Board, is an acknowledgment of an assistant's qualifications and professional competence, but usually is not required for employment. In several states that have adopted standards for dental assistants who perform radiologic procedures, completion of the

certification examination meets those standards. Applicants must also have taken a course in cardiopulmonary resuscitation (CPR).

Employment Trends

Job prospects for dental assistants should be good. Employment is expected to grow much faster than the average for all occupations through the year 2008. Also, the proportion of workers leaving the occupation and who must be replaced is above average. Many opportunities involve entry-level positions offering on-the-job training.

Population growth and greater retention of natural teeth by middle-aged and older people will fuel demand for dental services. Older dentists, who are less likely to employ assistants, will leave and be replaced by recent graduates, who are more likely to use one, or even two, assistants. In addition, as dentists' workloads increase, they are expected to hire more assistants to perform routine tasks, so they may devote their own time to more profitable procedures.

Numerous job openings for dental assistants will arise from the need to replace assistants who leave the occupation. For many, this entry-level occupation provides basic training and experience and serves as a stepping-stone to more highly skilled and higher-paying jobs. Other assistants leave the job to take on family responsibilities, return to school, retire, or for other reasons.

Without further education, advancement opportunities are limited. Some dental assistants working the front office become office managers. Others, working chairside, go back to school to become dental hygienists.

Earnings

According to the latest data, median hourly earnings of dental assistants were \$12.49 in recent years. The middle 50 percent earned between \$9.99 and \$15.51 per hour. The lowest 10 percent earned less than \$8.26 and the highest 10 percent earned more than \$18.57 per hour.

Related Occupations

Workers in other occupations supporting health practitioners include medical assistants, physical therapy assistants, occupational therapy assistants, pharmacy technicians and assistants, and veterinary assistants.

Additional Information

Information about career opportunities, scholarships, accredited dental assistant programs, and requirements for certification is available from:

- Commission on Dental Accreditation, American Dental Association, 211 E. Chicago Ave., Suite 1814, Chicago, IL 60611. Internet: <http://www.ada.org>.
- Dental Assisting National Board, Inc., 676 North Saint Clair, Suite 1880, Chicago, IL 60611. Internet: <http://www.dentalassisting.com>.

For general information about a career as a dental assistant, including training and continuing education, contact:

- American Dental Assistants Association, 203 North LaSalle St., Suite 1320, Chicago, IL 60601.

For information about a career as a dental assistant and schools offering training, contact:

- National Association of Health Career Schools, 2301 Academy Dr., Harrisburg, PA 17112.

Information about certification as a dental assistant is available from:

- American Medical Technologists, 710 Higgins Rd., Park Ridge, IL 60068-5765. Internet: <http://www.amtl.com>.

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Chapter 9



Nursing

Key Terms

Registered nurse (R.N.)	Nursing home nurses
A.D.N. nurse	Home health nurses
B.S.N. nurse	Clinical nurse specialists
Diploma nurse	Certified nurse midwives
Advanced practice nurse (A.P.N.)	Certified registered nurse anesthetists
Medical regimen	Licensed practical nurse (L.P.N.)
Hospital nurses	

Registered Nurses

Work Description

Registered nurses (R.N.'s) work to promote health, prevent disease, and help patients cope with illness. They are advocates and health educators for patients, families, and communities. When providing direct patient care, they observe, assess, and record symptoms, reactions, and progress; assist physicians during treatments and examinations; administer medications; and assist in convalescence and rehabilitation. R.N.'s also develop and manage nursing care plans; instruct patients and their families in proper care; and help individuals and groups take steps to improve or maintain their health. Laws governing nursing practice in each state define the tasks R.N.'s are allowed to perform, but it is the work setting—together with the nurse's educational preparation and experience—that determines day-to-day job duties.

Hospital nurses form the largest group of nurses. Most are staff nurses, who provide bedside nursing care and carry out the *medical regimen* prescribed by physicians. They may also supervise licensed practical nurses and nursing assistants. Hospital nurses usually are assigned to groups of patients who require similar nursing care. For instance, some work with patients who have just had surgery; others specialize in the care of acutely ill children, trauma victims, or cancer patients. Some may rotate among departments.

Nursing home nurses manage nursing care for residents with conditions ranging from convalescing from a fall or fracture to the

final stages of Alzheimer's disease. R.N.'s assess residents' needs, develop treatment plans, and supervise licensed practical nurses and nursing assistants. R.N.'s are the only nurses trained to administer complex treatments such as starting intravenous fluids. However, they generally spend most of their time on administration and supervision of other nursing personnel.

Home health nurses provide periodic services, prescribed by a physician, to patients at home. They care for and instruct patients and their families. Home health nurses care for a broad range of patients, such as those recovering from illnesses and accidents, cancer, and childbirth. They must be able to work independently.

Public health nurses work in government and private agencies and clinics, schools, retirement communities, and other community settings. They instruct individuals and families and other groups in health education, disease prevention, nutrition, child care, and home care of the sick or handicapped. They arrange for immunizations, blood pressure testing, and other health screening. These nurses also work with community leaders, teachers, parents, and physicians in community health education. Some work in home health care, providing periodic services prescribed by a physician and instructing patients and families.

Private duty nurses care for patients who need constant attention. They work directly for families on a contract basis or for a nursing or temporary help agency that assigns them to patients. They provide services in homes, hospitals, nursing homes, and rehabilitation centers.

Office nurses assist physicians in private practice, clinics, surgicenters, emergency medical centers, and health maintenance organizations (HMOs). They prepare patients for, and assist with, examinations, administer injections and medications, dress wounds and incisions, assist with minor surgery, and maintain records. Some also perform routine laboratory and office work.

Occupational health or industrial nurses provide nursing care at work sites to employees, customers, and others with minor injuries and illnesses. They provide emergency care, prepare accident reports, and arrange for further care if necessary. They also offer health counseling, assist with health examinations and inoculations, and identify potential health or safety problems.

Head nurses or nurse supervisors direct nursing activities. They plan work schedules and assign duties to nurses and aides, provide

or arrange for training, and visit patients and observe nurses to ensure that care is properly carried out. They may also ensure that records and budgets are maintained and that equipment and supplies are ordered.

At the advanced level, *nurse practitioners* provide basic primary health care. They diagnose and treat common acute illnesses and injuries. Nurse practitioners can prescribe medications in all states and the District of Columbia. Other advanced practice nurses include *clinical nurse specialists*, *certified registered nurse anesthetists*, and *certified nurse midwives*. Advanced practice nurses have met higher educational and clinical practice requirements beyond the basic nursing education and licensing required of all R.N.'s.

Work Environment

Nurses generally work indoors in well-lighted, comfortable health care facilities. Home health and public health nurses travel to patients' homes, schools, and other sites. For those nurses who care for the ill and infirm, the physical demands of patient care can be strenuous. Nurses in general need physical stamina because they spend considerable time walking and standing. Emotional stability is required to cope with human suffering and frequent emergencies. Nurses work closely with, but subordinate to, physicians. Because patients in hospitals and nursing homes require care at all times, staff nurses in these institutions often have to work nights, weekends, and holidays. Office, occupational health, and public health nurses are more likely to work regular hours.

Nursing has its hazards, especially in hospitals, nursing homes, and clinics. Nurses may be called on to care for individuals with infectious diseases such as hepatitis and AIDS, where rigid guidelines must be observed to ensure the safety of patients and nurses. Nurses must also guard against dangers associated with radiation, chemicals used for sterilization and other purposes, and gases used for anesthesia. In addition, nurses are vulnerable to back injury, shocks from electrical equipment, and hazards posed by compressed gases.

Employment Opportunities

As the largest health care occupation, registered nurses hold about 2.1 million jobs, according to the latest data. About three out of five jobs were in hospitals, in inpatient and outpatient departments. Others were mostly in offices and clinics of physicians and other health practitioners, home health care agencies, nursing homes, temporary help agencies, schools, and government agencies. The remaining R.N.'s worked in residential care facilities, social service agencies, religious organizations, research facilities, management and public relations firms, insurance agencies, and private households. About one out of four R.N.'s worked part-time. In June 2001 the American Hospital Association reported that out of 168,000 unfilled hospital positions across the country, 126,000 of those vacancies were for registered nurses.

Educational and Legal Requirements

All states and the District of Columbia require a license to practice as a registered nurse. To obtain this license, nurses must graduate from an approved school of nursing and pass a national examination. Nurses may be licensed in more than one state, either by examination or endorsement of a license issued by another state. Some states require continuing education for license renewal, and licenses must be renewed periodically.

Most recently, there were more than 2,200 entry-level R.N. programs. There are three major educational paths to nursing: associate degree in nursing (*A.D.N.*), bachelor of science degree in nursing (*B.S.N.*), and *diploma*. *A.D.N.* programs, offered by community and junior colleges, take about two years. About half of all R.N. programs in 1998 were at the *A.D.N.* level. *B.S.N.* programs, offered by colleges and universities, take four or five years. About one-fourth of all programs in 1998 offered degrees at the bachelor's level. *Diploma* programs, given in hospitals, last two to three years. Only a small number of programs, about 4 percent, offer *diploma*-level degrees. Generally, licensed graduates of any of the three program types qualify for entry-level positions as staff nurses.

There have been attempts to raise the educational requirements for an R.N. license to a bachelor's degree and, possibly, create new job titles. These changes, should they occur, will probably be made state by state, through legislation or regulation. Changes in licensure requirements would not affect currently licensed R.N.'s, who would be "grandfathered" in, no matter what their educational preparation. However, individuals considering nursing should carefully weigh the pros and cons of enrolling in a B.S.N. program, as their advancement opportunities will be broader. In fact, many career paths are open only to nurses with bachelor's or advanced degrees. A bachelor's degree is usually necessary for administrative positions and is a prerequisite for admission to graduate nursing programs in research, consulting, teaching, or a clinical specialization.

Many A.D.N. and diploma-trained nurses enter bachelor's programs to prepare for a broader scope of nursing practice. They can often find a hospital position and then take advantage of tuition reimbursement programs to work toward a B.S.N.

Nursing education includes classroom instruction and supervised clinical experience in hospitals and other health facilities. Students take courses in anatomy, physiology, microbiology, chemistry, nutrition, psychology and other behavioral sciences, and nursing. Coursework also includes liberal arts classes.

Supervised clinical experience is provided in hospital departments such as pediatrics, psychiatry, maternity, and surgery. A growing number of programs include clinical experience in nursing homes, public health departments, home health agencies, and ambulatory clinics.

Experience and good performance can lead to promotion to more responsible positions. Nurses can advance, in management, to assistant head nurse or head nurse. From there, they can advance to assistant director, director, and vice president. Increasingly, management-level nursing positions require a graduate degree in nursing or health services administration. They also require leadership, negotiation skills, and good judgment. Graduate programs preparing executive-level nurses usually last one to two years.

Within patient care, nurses can advance to clinical nurse specialist, nurse practitioner, certified nurse midwife, or certified reg-

istered nurse anesthetist. These positions require one or two years of graduate education, leading in most instances to a master's degree or a certificate.

Some nurses move into the business side of health care. Their nursing expertise and experience on a health care team equip them to manage ambulatory, acute, home health, and chronic care services. Some are employed by health care corporations in health planning and development, marketing, and quality assurance. Other nurses work as college and university faculty or do research.

Persons who want to pursue a nursing career should have a sincere desire to assist humanity and be sympathetic to the needs of others. Nurses must be able to accept responsibility and direct or supervise the activity of others; they must have initiative and, in appropriate situations, be able to follow orders precisely and determine if additional consultation is required. Good judgment is essential.

Employment Trends

Employment of registered nurses is expected to grow faster than the average for all occupations through 2008. Because the occupation is large, many new jobs will result. There will always be a need for traditional hospital nurses, but a large number of new nurses will be employed in home health, long-term, and ambulatory care.

Faster than average growth will be driven by technological advances in patient care, which permit a greater number of medical problems to be treated, and an increasing emphasis on primary care. In addition, the population of older people, who are much more likely than younger people to need medical care, is projected to grow very rapidly. Many job openings also will result from the need to replace experienced nurses who leave the occupation, especially as the median age of the registered nurse population continues to rise.

Employment of R.N.'s in hospitals, the largest sector, is expected to grow more slowly than in other health care sectors. While the intensity of nursing care is likely to increase, requiring more nurses per patient, the number of inpatients (those who

remain overnight) is not likely to increase much. Patients are being released earlier and more procedures are being done on an outpatient basis, both within and outside hospitals. The most rapid growth is expected in hospitals' outpatient facilities, such as same-day surgery, rehabilitation, and chemotherapy.

Employment in home health care is expected to grow rapidly. This growth will represent a response to the growing number of older persons with functional disabilities, consumer preferences for care in the home, and technological advances that make it possible to bring increasingly complex treatments into the home. The type of care demanded will require nurses who are able to perform complex procedures.

Employment in nursing homes is expected to grow much faster than average due to increases in the population of people in their eighties and nineties, many of whom will require long-term care. In addition, the financial pressure on hospitals to release patients as soon as possible should produce more nursing home admissions. Growth in units that provide specialized long-term rehabilitation for stroke and head injury patients or that treat Alzheimer's disease victims will also increase employment of R.N.'s.

An increasing proportion of sophisticated procedures, which once were performed only in hospitals, are being performed in physicians' offices and clinics, including ambulatory surgicenters and emergency medical centers. Accordingly, employment is expected to grow faster than average in these places as health care in general expands into new settings.

In evolving integrated health care networks, nurses may rotate among employment settings. As jobs in traditional hospital nursing positions are no longer the only option, R.N.'s will need to be flexible. Opportunities will be good for nurses with advanced education and training, such as nurse practitioners.

Earnings

According to most recent data, median annual earnings of registered nurses were \$44,840. The middle 50 percent earned between \$37,870 and \$54,000 per year. The lowest 10 percent earned less

than \$31,890 and the highest 10 percent earned more than \$64,360 per year. Median annual earnings in the industries employing the largest numbers of registered nurses were as follows:

Personnel supply services	\$46,860
Hospitals	45,780
Home health care services	43,640
Offices and clinics of medical doctors	43,480
Nursing and personal care facilities	41,330

Many employers offer flexible work schedules, child care, educational benefits, and bonuses.

Related Occupations

Workers in other occupations with responsibilities and duties related to those of registered nurses include occupational therapists, paramedics, physical therapists, physician assistants, and respiratory therapists.

Additional Information

For information on a career as a registered nurse and nursing education, contact:

- National League for Nursing, 61 Broadway, New York, NY 10006. Internet: <http://www.nin.org>.

For a list of B.S.N. and graduate programs, write to:

- American Association of Colleges of Nursing, 1 Dupont Circle NW., Suite 530, Washington, DC 20036. Internet: <http://www.aacn.nche.edu>.

Information on registered nurses is also available from:

- American Nurses Association, 600 Maryland Ave. SW, Washington, DC 20024-2571. Internet: <http://www.nursingworld.org>.

Licensed Practical Nurses

Work Description

Licensed practical nurses (L.P.N.'s), or *licensed vocational nurses (L.V.N.'s)*, as they are called in Texas and California, care for the sick, injured, convalescing, and disabled, under the direction of physicians and registered nurses.

Most L.P.N.'s provide basic bedside care. They take vital signs such as temperature, blood pressure, pulse, and respiration. They also treat bedsores, prepare and give injections and enemas, apply dressings, give alcohol rubs and massages, apply ice packs and hot water bottles, and insert catheters. L.P.N.'s observe patients and report adverse reactions to medications or treatments. They collect samples from patients for testing, perform routine laboratory tests, feed patients, and record food and liquid intake and output. They help patients with bathing, dressing, and personal hygiene, keep them comfortable, and care for their emotional needs. In states where the law allows, these nurses may administer prescribed medicines or start intravenous fluids. Some L.P.N.'s help deliver, care for, and feed infants. Other experienced L.P.N.'s supervise nursing assistants and aides.

In nursing homes L.P.N.'s handle a broad range of duties. In addition to providing routine bedside care, they may help assess residents' nursing needs, develop and implement treatment plans, and supervise nursing aides. L.P.N.'s also perform such complex nursing procedures as treating bedsores, administering cardiopulmonary resuscitation, preparing and giving injections, applying dressings, and inserting catheters.

In doctors' offices, walk-in clinics, HMOs, and other outpatient settings, L.P.N.'s perform a variety of clinical and clerical tasks. Specific duties depend on the size and nature of the practice. L.P.N.'s may, for example, prepare patients for examination and treatment, administer medications, apply dressings, assist with pro-

cedures, do laboratory work, and instruct patients about prescribed health care regimens. They also may make appointments and keep records.

In private homes, L.P.N.'s provide day-to-day patient care that may involve nursing treatments and use of technical equipment. In addition to providing nursing care, they may prepare meals, see that patients are comfortable, and help keep up their morale. They may teach family members how to perform simple nursing tasks.

Work Environment

Licensed practical nurses in hospitals and nursing homes generally work 40 hours per week, but often this includes some work at night and on weekends and holidays. They often must stand for long periods. They may assist patients to move in bed, or stand, or walk. Some lifting may be involved. They must be able to handle the emotional stress involved in working with sick patients and their families.

Hospital nurses face the occupational hazards associated with being around caustic chemicals, infectious diseases, and radiation. L.P.N.'s must also be careful to avoid back injuries, shocks from electrical equipment, and the dangers associated with compressed gases such as those used for anesthesia.

Many nursing homes are understaffed, resulting in a heavy workload for nursing home nurses. The difficulty of fulfilling many roles adds to the strain inherent in providing suitable care for people who may be frail and mentally confused. Many nursing home residents suffer from illnesses that make them irrational, highly agitated, or given to abrupt shifts in mood.

In private homes, L.P.N.'s usually work 8 to 12 hours per day and go home at night. Private duty nursing affords freedom in setting work hours and the length and frequency of work assignments.

Employment Opportunities

Most recently, licensed practical nurses held 700,000 jobs. Thirty-two percent of L.P.N.'s worked in hospitals, and 28 percent worked in nursing homes. The rest worked in a variety of settings, including doctors' offices, clinics, and temporary nursing pools. About one in four worked part-time.

Some L.P.N. jobs are held by private duty nurses. These L.P.N.'s are either self-employed, in which case they are hired directly by patients or their families, or they are employees of a nurses' registry, a temporary help agency, or home health services.

Educational and Legal Requirements

All states require L.P.N.'s to pass a licensing examination after completing a state-approved practical nursing program. A high school diploma is usually required for entry, but some programs accept people without a diploma.

Most recently, approximately 1,100 state-approved programs provided practical nursing training. Almost 6 out of 10 students were enrolled in technical or vocational schools, while 3 out of 10 attended community and junior colleges. Others were enrolled in high schools, hospitals, and colleges and universities.

Most practical nursing programs last about one year and include both classroom study and supervised clinical practice (patient care). Classroom study covers basic nursing concepts and patient-care-related subjects, including anatomy, physiology, medical-surgical nursing, pediatrics, obstetrics, psychiatric nursing, administration of drugs, nutrition, and first aid. Clinical practice usually takes place in a hospital, but sometimes occurs in other settings.

L.P.N.'s should have a caring, sympathetic nature. They should be emotionally stable because work with the sick and injured can be stressful. As part of a health care team, they must be able to follow orders and work under close supervision.

Employment Trends

Employment of L.P.N.'s is expected to grow as fast as the average for all occupations through 2008 in response to two factors: the long-term care needs of a rapidly growing population of very old people, and the general growth of health care. However, L.P.N.'s seeking positions in hospitals may face competition, as the number of hospital jobs for these types of nurses declines; the number of inpatients, with whom most L.P.N.'s work, is not expected to increase much. As in most other occupations, replacement of retiring personnel will be a major source of job openings.

Employment in nursing homes is expected to grow faster than the average. Nursing homes will offer the most new jobs for L.P.N.'s as the number of aged and disabled persons in need of long-term care rises. In addition to caring for the aged, nursing homes will be called on to care for the increasing number of patients who have been released from the hospital but have not recovered enough to return home.

Much faster than average growth in L.P.N. employment is expected in home health care services. It will represent a response to the growing number of older persons with functional disabilities, consumer preferences for care in the home, and technological advances, which make it possible to bring increasingly complex treatments into the home.

An increasing proportion of sophisticated procedures, which once were performed only in hospitals, are being performed in physicians' offices and clinics, including ambulatory surgicenters and emergency medical centers, thanks largely to advances in technology. As a result, employment is projected to grow much faster than average in these places as health care in general expands into more types of facilities.

Earnings

According to most recent data, median annual earnings of licensed practical nurses were \$29,440. The middle 50 percent earned between \$24,920 and \$34,800 per year.

The lowest 10 percent earned less than \$21,520 and the highest 10 percent earned more than \$41,800 per year. Median annual earnings in the industries employing the largest numbers of licensed practical nurses were as follows:

Personnel supply services	\$35,750
Home health care services	31,220
Nursing and personal care facilities	29,980
Hospitals	28,450
Offices and clinics of medical doctors	27,520

Related Occupations

Other jobs that involve working closely with people while helping them include emergency medical technicians, dental assistants, and dietetic technicians.

Additional Information

For information about practical nursing, contact:

- National League for Nursing, 61 Broadway, New York, NY 10006. Internet: <http://www.nln.org>.
- National Association for Practical Nurse Education and Service, Inc., 1400 Spring St., Suite 330, Silver Spring, MD 20910.

Chapter 10



Pharmacists

Key Terms

Pharmaceuticals	Radiopharmacists/nuclear pharmacists
Compounding	Board examination
Medication profile	Internship
Side effects	Pharmaceutical chemistry
Pharmacotherapists	Pharmacy technicians
Nutrition support pharmacists	Pharmacy assistants

Pharmaceutical Partners

One of the main tools of physicians treating patients is medication. Although doctors prescribe *pharmaceuticals*, the professionals who actually dispense the medication are pharmacists. The details of the pharmacist's profession follow in the rest of this chapter.

Pharmacists

Work Description

Pharmacists advise health professionals and the public on the proper selection and use of medicines. The special knowledge of the pharmacist is needed because of the complexity and potential side effects of the large and growing number of pharmaceutical products on the market.

In addition to providing information, pharmacists dispense drugs and medicines prescribed by physicians, dentists, and other health professionals. Pharmacists must understand the use, composition, and effects of drugs and how they are tested for purity and strength. *Compounding*—the actual mixing of ingredients to form powders, tablets, capsules, ointments, and solutions—is now only a small part of a pharmacist's practice, as most medicines are produced by pharmaceutical companies in the dosage and form used by the patient.

Pharmacists practicing in community or retail pharmacies may have other duties. Pharmacists in community or retail pharmacies counsel patients as well as answer questions about prescription drugs, such as possible adverse reactions or interactions. They provide information about over-the-counter drugs and make recommendations after asking a series of health questions, such as whether the customer is taking any other medications. Such pharmacists also give advice about durable medical equipment and home health care supplies. Those who own or manage community pharmacies may sell non-health-related merchandise, hire and supervise personnel, and oversee the general operation of the pharmacy. Some community pharmacists provide specialized services to help patients manage conditions such as diabetes, asthma, smoking cessation, or high blood pressure.

Widespread use of computers in retail stores allows pharmacists to create medication profiles for their customers. A *medication profile* is a computerized record of the customer's drug therapy. Pharmacists use these profiles to ensure that harmful drug interactions do not occur and to monitor a patient's compliance with the doctor's instructions—by comparing how long it takes the patient to finish the drug versus the recommended daily dosage.

Pharmacists in hospitals and clinics dispense medications and advise the medical staff on the selection and *side effects* of drugs. They may make sterile solutions, buy medical supplies, teach students majoring in health-related disciplines, and perform administrative duties. They also may be involved in patient education, monitoring of drug regimens, and drug use evaluation. In addition, pharmacists work as consultants to the medical team on drug therapy and patient care. In some hospitals they make hospital rounds with physicians, talking to patients and monitoring pharmaceutical use. Their role is crucial to safe, efficient, and proper therapeutic care.

Pharmacists who work in home health care monitor drug therapy and prepare infusions—solutions that are injected into patients—and other medications for use in the home.

Pharmacotherapists specialize in drug therapy and work closely with physicians. They may make hospital rounds with physicians—talking to patients and monitoring pharmaceutical use.

Nutrition support pharmacists help determine and prepare the drugs needed for nutrition. Some pharmacists work in oncology (cancer) and psychiatric drug treatment.

Some pharmacists prepare and dispense radioactive pharmaceuticals. Called *radiopharmacists* or *nuclear pharmacists*, they apply the principles and practices of pharmacy and radiochemistry to produce radioactive drugs that are used for diagnosis and therapy.

Pharmacists use their basic educational backgrounds in a host of federal and state positions. At the federal level, pharmacists hold staff and supervisory posts in the U.S. Public Health Service, the Veterans Administration, the Food and Drug Administration, and in all branches of the armed services. Certain of these posts provide commissioned officer status; others come under the heading of civil service.

At the state and federal levels, there are boards charged with regulating the practice of pharmacy to preserve and protect public health. These legal boards governing pharmacy practice usually employ pharmacists as full-time executive officers. One or more inspectors, frequently also pharmacists, serve each state. As state health agencies consolidate their purchases, pharmacists are often engaged as purchasers of medical and pharmaceutical supplies on a mass scale.

Nearly every state has an active pharmaceutical association that employs a full-time executive officer. This officer is usually a graduate of a college of pharmacy. Several national professional associations are also guided by pharmacists with an interest and special talent in organizational work.

Other pharmacists are engaged in highly specialized tasks. There are pharmacists in advertising, packaging, technical writing, magazine editing, and science reporting. Pharmacists with legal training serve as patent lawyers or as experts in pharmaceutical law. Pharmacists are found in U.S. space laboratories, aboard ships such as the *S.S. Hope*, and directing giant manufacturing firms.

Work Environment

Pharmacists usually work in clean, well-lighted, and well-ventilated areas that resemble small laboratories. Shelves are lined with hundreds of different drug products. In addition, some items are refrigerated, and many substances (narcotics, depressants, and stimulants) are kept under lock and key. Pharmacists spend much time on their feet. When working with dangerous pharmaceutical products, pharmacists must take the proper safety precautions,

such as wearing gloves and masks and working with special protective equipment. Because pharmacies in many communities and hospitals are open around the clock, pharmacists in those settings may have to work evenings, nights, weekends, and holidays. Consultant pharmacists may travel to nursing homes or other facilities to monitor people's drug therapy.

About one out of seven pharmacists worked part-time in 1998. Most full-time salaried pharmacists worked about 40 hours per week. Some, including most self-employed pharmacists, worked more than 50 hours per week.

Employment Opportunities

According to most recent data, pharmacists hold about 185,000 jobs. About three out of five worked in community pharmacies, either independently owned or part of a drugstore chain, grocery store, department store, or mass merchandiser. Most community pharmacists were salaried employees, but some were self-employed owners. About one-quarter of salaried pharmacists worked in hospitals, and others worked in clinics, mail-order pharmacies, pharmaceutical wholesalers, home health care agencies, or the federal government.

Hospitals are the second largest employer of pharmacists. Health maintenance organizations, home health agencies, and clinics provide a relatively small, but rapidly growing, number of jobs. Pharmacy services in nursing homes are generally provided on a consultant or contract basis rather than by staff pharmacists.

Pharmacists employed by the federal government work chiefly in hospitals and clinics of the Veterans Administration and the U.S. Public Health Service. State and local health departments, pharmaceutical manufacturers, and professional associations also employ pharmacists.

Some pharmacists hold more than one job. They may work a standard week in their primary work setting and then work several hours a week in a secondary setting—as a consultant to a nursing home or clinic, for example.

Although most rural areas and small towns have at least one pharmacy, most pharmacists practice in or near cities that have large populations. All states require a licensed pharmacist to be in attendance during pharmacy hours.

Self-employed pharmacists usually work more hours per week than those in salaried positions because of the additional responsibility of managing a business.

Educational and Legal Requirements

A license to practice pharmacy is required in all states, the District of Columbia, and U.S. territories. To obtain a license, one must graduate from an accredited college pharmacy program, pass a state *board examination*, demonstrate good character, and, in all states, serve an *internship* under the supervision of a licensed pharmacist. Internships generally are served in a community or hospital pharmacy. Most states grant a license without reexamination to qualified pharmacists already licensed by another state. Many pharmacists are licensed to practice in more than one state. Most states require continuing education for license renewal.

In 1998, 81 colleges of pharmacy were accredited to confer degrees by the American Council on Pharmaceutical Education. Nearly all pharmacy programs grant the degree of doctor of pharmacy (Pharm.D.), which requires at least six years of postsecondary study. A small number of pharmacy schools continue to award the five-year bachelor of science (B.S.) in pharmacy degree. Note, however, that all accredited pharmacy schools are expected to graduate their last B.S. class by the year 2005. Either a Pharm.D. or B.S. degree currently fulfills the requirements to take the licensure examination of a state board of pharmacy.

Admission requirements vary among colleges of pharmacy. A few colleges admit students directly from high school. Most colleges of pharmacy, however, require entrants to have completed one or two years of prepharmacy education in an accredited junior college, college, or university. A prepharmacy curriculum usually emphasizes mathematics and basic sciences, such as chemistry, biology, and physics, as well as courses in the humanities, social sciences, and business administration. Because entry requirements vary among colleges of pharmacy, prepharmacy students should acquaint themselves with the requirements of the school they wish to attend.

The bachelor's degree in pharmacy is the minimum educational qualification for most positions in the profession. A growing number of students are enrolling in advanced professional pro-

grams leading to Pharm.D. The Pharm.D. is increasingly important for clinical pharmacy work. A master's or Ph.D. in pharmacy or a related field usually is required for research, and a Pharm.D., master's, or Ph.D. usually is necessary for administrative or faculty positions.

Sixty colleges of pharmacy offer the master of science degree or the Ph.D. Although some pharmacy graduates who are interested in further training pursue an advanced degree in pharmacy, there are other options. Some enter one- or two-year residency programs or fellowships. A pharmacy residency is an organized, directed, postgraduate training program in a defined area of pharmacy practice. A pharmacy fellowship is a directed, highly individualized program designed to prepare the participant to become an independent researcher.

Areas of graduate study include pharmaceuticals and *pharmaceutical chemistry* (physical and chemical properties of drugs and dosage forms), pharmacology (effects of drugs on the body), pharmacognosy (drugs derived from plant or animal sources), hospital pharmacy, and pharmacy administration. Courses in pharmacy administration are particularly helpful to pharmacists in developing the skills needed to manage a community or institutional pharmacy.

All colleges of pharmacy offer courses in pharmacy practice, designed to teach students the skills involved in compounding and dispensing prescriptions and to strengthen their understanding of professional ethics and responsibilities. In many cases, professional training increasingly emphasizes direct patient care as well as consultative services to other health professionals.

Colleges of pharmacy also instruct students in the use of computers in the pharmacy. Computers are used to create patient medication profiles, to file and record prescriptions, and for inventory control, billing, and other administrative tasks.

Pharmaceutical manufacturers, chain drugstores, state and national pharmacy associations, colleges of pharmacy, and other organizations award scholarships annually to students studying full-time toward a degree in pharmacy.

Prospective pharmacists should have scientific aptitude, good communication skills, and a desire to help others. They must also be conscientious and pay close attention to detail, because the decisions they make affect human lives.

Pharmacists often begin as employees in community pharmacies. After they gain experience and secure the necessary capital,

they may become owners or part-owners of pharmacies. A pharmacist with experience in a chain drugstore may advance to a managerial position, and later to a higher executive position within the company. Hospital pharmacists who have the necessary training and experience may advance to director of pharmacy services or to other administrative positions. Pharmacists in the pharmaceutical industry often have opportunities for advancement in management, sales, research, quality control, advertising, production, packaging, and other areas.

Some individuals put their pharmaceutical training to work in related fields. Experienced pharmacists may be hired as sales or service representatives by pharmaceutical manufacturers and wholesalers. They sell to community pharmacies and hospitals and inform physicians about new drugs. Other pharmacists teach in colleges of pharmacy, supervise the manufacture of pharmaceuticals, or are involved in research. Pharmacists, like physicians and dentists, tend to remain in the field until they retire. Relatively few transfer to other lines of work.

Employment Trends

Employment of pharmacists is expected to grow slower than the average for all occupations through the year 2008, despite the increased pharmaceutical needs of a larger and older population, and greater use of medication.

Retail pharmacies are taking steps to increase their prescription volume to make up for declining dispensing fees. Automation of drug dispensing and greater use of pharmacy technicians will help them to dispense more prescriptions. The number of community pharmacists needed in the future will depend on the rate at which chain drug stores expand and the willingness of insurers to reimburse pharmacists for providing clinical services to patients taking prescription medications. With its emphasis on cost control, managed care encourages growth of lower-cost prescription drug distributors such as mail-order firms for certain medications. As a consequence, slower employment growth is expected in traditional chain and independent pharmacies.

Employment of pharmacists in hospitals is also expected to grow slowly, as hospitals reduce inpatient stays, downsize, and consolidate departments. Pharmacy services are shifting to long-

term, ambulatory, and home care settings, where opportunities for pharmacists will be best. New opportunities for pharmacists are emerging in managed care organizations, where pharmacists analyze trends and patterns in medication use for their populations of patients. Fast growth is also expected for pharmacists trained in research, disease management, and pharmacoeconomics—determining the costs and benefits of different drug therapies.

Cost-conscious insurers and health systems may continue to emphasize the role of pharmacists in primary and preventive health services. They realize that the expense of using medication to treat diseases and conditions is often considerably less than the potential costs for patients whose conditions go untreated. Pharmacists can also reduce the expenses resulting from unexpected complications due to allergic reactions or medication interactions.

The increase in the population of middle-aged and elderly people will spur demand for pharmacists in all practice settings. The number of prescriptions influences the demand for pharmacists, and the middle-aged and elderly populations use more prescription drugs, on average, than younger people do.

Other factors likely to increase the demand for pharmacists through the year 2008 include the likelihood of scientific advances that will make more drug products available, new developments in administering medication, and increasingly sophisticated consumers seeking more information about drugs.

Earnings

The latest statistics show that median annual earnings of pharmacists were \$70,950. The middle 50 percent earned between \$61,860 and \$81,690 per year. The lowest 10 percent earned less than \$51,570 and the highest 10 percent more than \$89,010 per year.

According to a survey conducted by *Drug Topics* magazine, the average base salary of a full-time, salaried pharmacist was about \$67,824 per year in 2000. Pharmacists working in chain drugstores had an average base salary of about \$71,486 per year, pharmacists working in independent drugstores averaged about \$62,040, and hospital pharmacists averaged about \$61,250. Overall, salaries for pharmacists were highest on the West Coast.

Many pharmacists also receive compensation in the form of bonuses, overtime, and profit-sharing.

Related Occupations

Pharmacists dispense the prescription orders of physicians, dentists, and other health practitioners and are responsible for selecting, compounding, dispensing, and preserving drugs and medicines. Workers in other professions requiring similar educational training and involving work with pharmaceutical compounds or performing related duties include medical scientists, pharmaceutical chemists, pharmacologists, and biological technicians.

Additional Information

Additional information on pharmacy as a career, preprofessional and professional requirements, programs offered by all the colleges of pharmacy, and student financial aid is available from:

- American Association of Colleges of Pharmacy, 1426 Prince St., Alexandria, VA 22314. Internet: <http://www.aacp.org>.

General information on careers in pharmacy is available from:

- American Society of Health-System Pharmacists, 7272 Wisconsin Ave., Bethesda, MD 20814. Internet: <http://www.ashp.org>.
- American Pharmaceutical Association, 2215 Constitution Ave. NW., Washington, DC 20037-2985. Internet: <http://www.aphanet.org>.
- National Association of Chain Drug Stores, 413 N. Lee St., P.O. Box 1417-D49, Alexandria, VA 22313-1480. Internet: <http://www.nacds.org>.

State licensure requirements are available from each state's board of pharmacy.

Information on specific college entrance requirements, curricula, and financial aid is available from the dean of each college of pharmacy.

Pharmacy Technicians and Assistants

Work Description

Pharmacy technicians and assistants help licensed pharmacists provide medication and other health care products to patients. *Pharmacy technicians* usually perform more complex tasks than assistants do, although in some states their duties and job titles overlap. Technicians typically perform routine tasks to help prepare prescribed medication for patients, such as counting and labeling. A pharmacist must check every prescription before it can be given to a patient, however. Technicians refer any questions regarding prescriptions, drug information, or health matters to the pharmacist. *Pharmacy assistants* usually have fewer, less complex responsibilities than technicians do. They are often clerks or cashiers who primarily answer telephones, handle money, stock shelves, and perform other clerical duties.

Pharmacy technicians who work in retail pharmacies have varying responsibilities depending on state rules and regulations. Technicians receive written prescriptions or requests for prescription refills from patients or representatives. They must verify that the information on the prescription is complete and accurate. To prepare a prescription, technicians must retrieve, count, pour, weigh, measure, and sometimes mix the medication. Then, they must prepare the prescription labels, select the type of prescription container, and affix the prescription and auxiliary labels to the container. Once the prescription is filled, technicians price and file the prescription, which must be checked by a pharmacist before it is given to a patient. Technicians may establish and maintain patient profiles, prepare insurance claim forms, and stock and take inventory of both prescription and over-the-counter medications. Some also clean the pharmacy equipment, help with the maintenance of equipment and supplies, and manage the cash register.

In hospitals, technicians have added responsibilities. They read patient charts and prepare and deliver medicines to patients. The

pharmacist must check the order before it is delivered to the patient. The technician then copies the information about the prescribed medication onto the patient's profile. Technicians may also assemble a 24-hour supply of medicine for every patient. They package and label each dose separately. The package is then placed in the medicine cabinet of each patient, until the supervising pharmacist checks it. It is then given to the patient. Technicians are responsible for keeping a running inventory of medicines, chemicals, and other supplies used along the way.

Work Environment

Pharmacy technicians and assistants work in clean, organized, well-lit, and well-ventilated areas. Most of their workday is spent on their feet. They may be required to lift heavy boxes or to use stepladders to retrieve supplies from high shelves.

Both technicians and assistants work the same hours as pharmacists do. This schedule includes evenings, nights, weekends, and some holidays. Most technicians work 35 to 45 hours per week. Because some hospital and retail pharmacies are open 24 hours per day, technicians and assistants may work varying shifts. There are many opportunities for part-time work in both retail and hospital settings.

Employment Opportunities

According to most recent data, pharmacy technicians and assistants hold about 170,000 jobs. Seven out of 10 jobs are in retail pharmacies, either independently owned or part of a drugstore chain, grocery store, department store, or mass merchandiser. Two out of 10 jobs are in hospitals, and a small number are in mail-order pharmacies, clinics, pharmaceutical wholesalers, and the federal government.

Educational and Legal Requirements

Pharmacy Technicians. Although most pharmacy technicians receive informal on-the-job training, employers are beginning to favor those who have completed some formal training. Currently,

there are few state and no federal requirements for formal training or education of pharmacy technicians. Employers that can neither afford nor spare the time to give on-the-job training often seek formally educated pharmacy technicians. Formal education programs emphasize the technicians' interest and dedication to the work to potential employers. Some hospitals, proprietary schools, vocational or technical colleges, and community colleges offer formal education programs.

Formal pharmacy technician education programs require classroom and laboratory work in a variety of areas, including medical and pharmaceutical terminology, pharmaceutical calculations, pharmacy record-keeping, pharmaceutical techniques, and pharmacy law and ethics. Technicians are also required to learn medication names, actions, uses, and doses. Many training programs include clerkships or internships, where students gain hands-on experience in real-world pharmacies. Upon completion of the training, students receive a diploma, certificate, or an associate degree, depending on the program.

Prospective pharmacy technicians with prior experience working as an assistant in a community pharmacy or volunteering in a hospital may have an advantage in finding jobs. Employers also prefer applicants with strong customer service and communication skills and experience in managing inventories, counting, measuring, and using a computer. Technicians entering the field need strong spelling and reading skills. A background in mathematics, chemistry, English, and health education may also be beneficial.

The Pharmacy Technician Certification Board administers the National Pharmacy Technician Certification Examination. This exam is voluntary and confirms the competency of the individual to act as a pharmacy technician. Eligible exam candidates must have a high school diploma or GED, and those who pass the exam earn the title of Certified Pharmacy Technician. Certification helps technicians formalize their career plans and feel like part of a health care team. Employers know that individuals who pass the exam have a standardized body of knowledge and skills.

Certified technicians must be recertified every two years. Technicians must complete 20 contact hours of pharmacy-related topics within the two-year certification period to become eligible for recertification. At least one contact hour must be in the area of pharmacy law. Contact hours can be earned from several different sources, including pharmacy associations, pharmacy colleges, and

pharmacy technician training programs. As many as 10 contact hours can be earned when the technician is employed under the direct supervision and instruction of a pharmacist.

Successful pharmacy technicians are alert, observant, organized, dedicated, and responsible. They should be willing and able to take directions. They must enjoy precise work—details are sometimes a matter of life and death. Although a pharmacist must check and approve all of their work, technicians should be able to work on their own without constant instruction from the pharmacist. Candidates interested in becoming pharmacy technicians cannot have prior records of drug or substance abuse.

Strong interpersonal and communication skills are needed because technicians engage in much interaction with patients, coworkers, and health care professionals. Teamwork is very important because technicians are often required to coordinate their activities with other technicians.

Advancement is usually limited, although some technicians enroll in pharmacy school and become pharmacists.

Pharmacy Assistants. Pharmacy assistants are almost always trained on the job. They may begin by observing a more experienced worker. After they become familiar with the store's equipment, policies, and procedures, they begin to work on their own. Once they become experienced workers, they are not likely to receive further training, except when new equipment is introduced or when policies or procedures change. When necessary, on-the-job training is usually provided.

To become a pharmacy assistant, one should be able to perform repetitious work accurately. Assistants need good basic mathematics skills and good manual dexterity. Because they deal constantly with the public, pharmacy assistants should be neat in appearance and able to deal pleasantly and tactfully with customers. Some employers may prefer people with experience in typing, handling money, or operating specialized equipment, including computers.

Employment Trends

Employment of pharmacy technicians and assistants is expected to grow as fast as average for all occupations through 2008 due to the increased pharmaceutical needs associated with a larger and

older population, and greater use of medication. The increased number of middle-aged and elderly people will spur demand for technicians and assistants in all practice settings. The middle-aged and elderly populations use more prescription drugs, on average, than younger people do.

Job opportunities are expected to be good, especially for technicians and assistants with formal training or previous experience. Many jobs for pharmacy technicians and assistants will result from the need to replace workers who transfer to other occupations or leave the labor force. Opportunities for part-time work are also expected to be good.

Cost-conscious insurers, pharmacies, and health systems will continue to emphasize the role of technicians and assistants. As a result, pharmacy technicians and assistants will assume responsibility for more routine tasks previously performed by pharmacists. Pharmacy technicians will also need to learn and master new pharmacy technology as it emerges. For example, robotic machines are now frequently used to dispense medicine into containers. Technicians oversee these machines, stock the bins, and label the containers. Although automation is becoming increasingly incorporated into the job, it will not necessarily reduce the need for technicians.

Many states have legislated the maximum number of technicians who can work under a pharmacist. In some states, increased demand for technicians has encouraged a higher ratio of technicians to pharmacists.

Earnings

The latest data show that median hourly earnings of pharmacy technicians in recent years were \$9.93. The middle 50 percent earned between \$8.12 and \$12.26 per hour; the lowest 10 percent, less than \$7.00 per hour; and the highest 10 percent, more than \$14.56 per hour. Median hourly earnings of pharmacy technicians were \$8.00 in drugstores, \$8.40 in grocery stores, and \$8.50 in department stores in 1997.

Median hourly earnings of pharmacy aides, also called pharmacy technicians, were \$8.88 in recent years. The middle 50 percent earned between \$7.02 and \$10.75 per hour; the lowest 10 percent, less than \$5.94 per hour; and the highest 10 percent,

more than \$12.64 per hour. Median hourly earnings of pharmacy aides were \$7.10 in drug stores and \$9.60 in hospitals in 1997.

Certified technicians may earn more. Shift differentials for working evenings or weekends can also increase earnings. Some technicians belong to unions representing hospital or grocery store workers.

Related Occupations

Workers in other medical support occupations include dental assistants, health information technicians, licensed practical nurses, medical secretaries, medical transcriptionists, occupational therapy assistants and aides, physical therapist assistants and aides, and surgical technologists.

Additional Information

For information on certification and a *National Pharmacy Technician Certification Examination Candidate Handbook*, contact:

- Pharmacy Technician Certification Board, 2215 Constitution Ave. NW, Washington DC 20037. Internet: <http://www.ptcb.org>.

For information on a career as a pharmacy technician, contact:

- American Society of Health System Pharmacists, 7272 Wisconsin Ave., Bethesda, MD 20814. Internet: <http://www.ashp.org>.
- National Association of Chain Drug Stores, 413 N. Lee St., P.O. Box 1417-D49, Alexandria, VA 22313-1480. Internet: <http://www.nacds.org>.

Chapter 11



Dietetics

Key Terms

Nutritionists	American Dietetic Association (ADA)
Clinical dietitians	Registration
Consultant dietitians	Internships
Community dietitians	Dietetic technician, registered (DTR)
Business dietitian	Dietetic assistant
Management dietitians	
Research dietitians	
Educator dietitian	

Dietitians

Work Descriptions

Dietitians and *nutritionists* are professionals trained in applying the principles of nutrition to food selection and meal preparation. They help prevent and treat illnesses by promoting healthy eating habits, scientifically evaluating clients' diets, and suggesting diet modifications. They counsel individuals and groups; set up and supervise food service systems for institutions such as schools, hospitals, and prisons; promote sound eating habits through education; and conduct research. Major areas of specialization include clinical, management, community, business and industry, and consultant dietetics. Dietitians also work as educators and researchers.

Clinical dietitians provide nutritional services for patients in hospitals, nursing homes, clinics, or doctors' offices. They assess patients' nutritional needs, develop and implement nutrition programs, and evaluate and report the results. Clinical dietitians confer with doctors and nurses about each patient so as to coordinate nutritional and medical needs.

Expanding knowledge in medical science has led to practice specialties in dietetics. Increasingly, clinical dietitians specialize in such areas as management of obese patients, care of the critically ill, renal care, and diabetes care. Those who care for critically ill patients oversee the preparation of custom-mixed, high-nutrition formulas for patients who require tube or intravenous feedings. Dietitians who specialize in renal dietetics treat dialysis patients

and other individuals with kidney problems; those who work with diabetics are responsible for establishing long-term nutritional care programs and a system for close monitoring.

Aside from assessing nutritional needs and developing a plan of treatment for individual patients, clinical dietitians may also perform administrative and managerial duties. In a nursing home or small hospital, the dietitian may also manage the food service department.

Consulting has become a significant specialty in dietetics. It has appeal for dietitians who need flexible work time and desire to be autonomous. *Consultant dietitians* work under contract with health care facilities or in their own private practices. They perform nutrition screenings for their clients, and they offer advice on diet-related concerns such as weight loss or cholesterol reduction. Some work for wellness programs, sports teams, supermarkets, and other nutrition-related businesses. They may consult with food service managers, providing expertise in sanitation, safety procedures, menu development, budgeting, and planning. They advise food and pharmaceutical industries; speak at professional seminars; author food, nutrition, and diet books; counsel patients in nursing homes and medical and dental centers; plan food service systems; and tailor nutrition regimens within fitness programs for athletes, dancers, and others.

Community dietitians counsel individuals and groups on sound nutrition practices to prevent disease and to promote good health. Employed in such places as home health agencies, HMOs, and human service agencies that provide group and home-delivered meals, their job is to evaluate individual needs, establish nutritional care plans, and communicate the principles of good nutrition in a way that individuals and their families can understand. Many community dietitians counsel on food selection in relation to lifestyle. They coordinate nutrition awareness and disease prevention programs in settings such as public health agencies, day care centers, and health clubs.

In addition to evaluating clients, dietitians working in a home health setting may provide informal instruction on nutrition, grocery shopping, or preparation of special infant formulas. In HMOs, dietitians provide nutritional counseling on a range of topics, from weight control to menu planning for diabetics. The dietitian may also collaborate with other HMO staff in conducting information sessions on such subjects as alcoholism, smoking, or hypertension.

Practice opportunities for clinical and community dietitians are becoming more diverse due to increased interest in nutrition and fitness on the part of the public and the medical profession alike. This new awareness has resulted in opportunities for private practitioners in areas such as manufacturing, advertising, and marketing food. Dietitians who work for food manufacturers or grocery store chains may analyze the nutritional content of foods for labeling purposes or marketing efforts. They may also prepare literature for distribution to customers, students, or other interested parties. Dietitians employed by magazines may determine the nutritional content of new recipes, analyze and report on the effectiveness of new diets, or report on important topics in nutrition such as the importance of dietary fiber or the value of vitamin supplements.

Dietitians are becoming increasingly visible in business. As businesses become more cognizant of the public's desire for accurate nutrition information, they are eager to hire experts. The *business dietitian* works as a professional resource for corporations in product development, food styling, and menu design; as the sales professional or purchasing agent representing food, equipment, or nutrition product accounts; and as a food, nutrition, or marketing expert in public relations and media.

Management dietitians are responsible for large-scale food services in such places as hospitals, company cafeterias, prisons, schools, and colleges and universities. They supervise the planning, preparation, and service of meals; select, train, and direct food service supervisors and workers; budget for and purchase food, equipment, and supplies; enforce sanitary and safety regulations; and prepare records and reports. Increasingly, dietitians use computer programs to plan meals that satisfy nutrition requirements and are economical at the same time. Dietitians who are directors of dietetic departments also decide on departmental policy; coordinate dietetic services with the activities of other departments; and are responsible for the dietetic department's budget, which in large organizations may amount to millions of dollars annually.

Research dietitians usually are employed in academic medical centers or educational institutions, although some work in community health programs. Using established research methods and analytical techniques, they conduct studies in areas that range from basic science to practical applications. Research dietitians may examine changes in the way the body uses food over the course of a

lifetime, for example, or the interaction of drugs and diet. They may investigate nutritional needs of persons with particular diseases, behavior modification as it relates to diet and nutrition, or applied topics such as food service systems and equipment. Often research dietitians collaborate with life scientists, physicians, nurses, biomedical engineers, and researchers from other disciplines.

Dietitians have always recognized the need to teach, whether in clinical practice, community settings, or corporations, and some are specifically interested in pursuing careers as health educators. The *educator dietitian* teaches the science of nutrition and food service systems management in colleges, universities, and hospitals; conducts nutrition and food service systems research; and authors articles and books on nutrition and food service systems. Dietitians in education usually hold advanced degrees and have considerable experience.

Work Environment

Most dietitians work 40 hours per week. About one in five dietitians works part-time. Those employed in hospitals sometimes work on weekends, while those in commercial food services tend to have irregular hours. Dietitians and nutritionists spend much of their time in clean, well-lighted, and well-ventilated areas such as research laboratories, classrooms, or offices near food preparation areas. However, they may spend time in kitchens and serving areas that are often hot and steamy and where some light lifting may be required. Dietitians and nutritionists in clinical settings may be on their feet for most of the workday. Those involved in consulting spend a significant amount of time traveling.

Employment Opportunities

According to most recent data, dietitians and nutritionists hold about 54,000 jobs. Hospitals and nursing homes are a major source of employment in this field. Firms that provide food services for hospital patients on a contract basis employ a growing number of dietitians and nutritionists.

State and local government programs and schools, colleges, and universities provide about one job in six. Other jobs for dietitians are found in prison systems, social service agencies, residential care facilities, airlines, hotel and restaurant chains, diet workshops, physical fitness facilities, and the federal government—mostly in the Department of Veterans Affairs. Some are employed by firms that provide food services on contract to such facilities as colleges and universities, airlines, correctional facilities, and company cafeterias.

Many dietitians work as consultants, on either a full-time or a part-time basis. In addition to serving on the staff of a hospital, for example, a dietitian may be a consultant for another health care facility. Nursing homes use consultants or part-time workers to provide much of their dietetic supervision. Some dietitians are self-employed, with their own companies and individual clients.

Experienced dietitians may advance to assistant, associate, or director of a dietetic department, or they may become self-employed. Some dietitians specialize in areas such as renal or pediatric dietetics. Others may leave the occupation to become sales representatives for equipment, pharmaceutical, or food manufacturers. Advancement to higher-level positions in teaching and research requires graduate education; public health nutritionists usually must earn a graduate degree. Graduate study in institutional or business administration is valuable to those interested in management dietetics.

Clinical specialization offers another path to career advancement. Specialty areas for clinical dietitians include kidney disease, diabetes, cancer, heart disease, pediatrics, and gerontology.

Educational and Legal Requirements

High school students interested in becoming a dietitian or nutritionist should take courses in biology, chemistry, mathematics, health, and communications. Dietitians and nutritionists need at least a bachelor's degree in dietetics, foods and nutrition, food service systems management, or a related area. College students

in these majors take courses in foods, nutrition, institution management, chemistry, biochemistry, biology, microbiology, and physiology. Other suggested courses include business, mathematics, statistics, computer science, psychology, sociology, and economics.

Twenty-seven of the 41 states with laws governing dietetics require licensure, 13 require certification, and one requires *registration*. The Commission on Dietetic Registration of the *American Dietetic Association (ADA)* awards the Registered Dietitian credential to those who pass a certification exam after completing their academic coursework and supervised experience. Because practice requirements vary by state, interested candidates should determine the requirements of the state in which they want to work before sitting for any exam.

As of 2001, there were 235 bachelor's and master's degree programs approved by the ADA's Commission on Accreditation/Approval for Dietetics Education (CAADE). Supervised practice experience can be acquired in two ways. The first option is to complete one of the 51 ADA-accredited coordinated programs combining academic and supervised practice experience in a four- to five-year program. The second option requires completion of 900 hours of supervised practice experience, either in one of the 225 CAADE-accredited *internships* or in one of the 25 CAADE-approved preprofessional practice programs. Internships and preprofessional practice programs may be full-time programs lasting 9 to 12 months, or part-time programs lasting two years. Students interested in research, advanced clinical positions, or public health may need a graduate degree.

Licensure of nutrition professionals is a rapidly growing movement initiated by state associations through state legislatures. It is designed to protect the rights of the ADA members and the U.S. public from fraud and deception by unqualified persons using the title "dietitian" or "nutritionist."

Persons who plan to become dietitians or nutritionists should have organizational and administrative ability as well as scientific aptitude, and should be able to work well with people.

The Committee on Dietetic Registration mandates recertification for registered dietitians through attending and reporting of approved continuing professional education activities.

Employment Trends

Employment of dietitians is expected to grow about as fast as the average for all occupations through the year 2008 due to increased emphasis on the prevention of disease by adoption of improved health habits. A growing and aging population will increase the demand for nutritional counseling in nursing homes, schools, prisons, community health programs, and home health care agencies. Public interest in nutrition and the emphasis on health education and prudent lifestyles will spur demand and also result in the need to replace experienced workers who leave the occupation.

Employment of dietitians in hospitals is expected to grow slowly as hospitals contract out their food service operations. On the other hand, faster than average growth in employment is expected in contract providers of food services, in residential care facilities, in offices and clinics of physicians, and in other social services.

Employment growth for dietitians and nutritionists may be somewhat constrained by the substitutability of other workers such as nurses, health educators, food service managers, and dietetic technicians. Growth will also be constrained by the limitations on insurance reimbursement for dietetic services.

Earnings

According to the most recent data, registered dietitians averaged \$38,450 annually in recent years. According to the ADA, median annual income for registered dietitians in 1999 varied by practice area as follows:

Consultation and business	\$48,810
Food and nutrition management	48,360
Education and research	47,040
Community nutrition	37,990
Clinical nutrition	37,565

Salaries also vary by years in practice, educational level, geographic region, and size of community.

Dietitians usually receive benefits such as paid vacations, sick leave, holidays, health insurance, and retirement benefits.

Related Occupations

Dietitians and nutritionists apply the principles of nutrition in a variety of situations. Workers with duties similar to those of management dietitians include food and home economists and food service managers. Nurses and health educators often provide services related to those of community dietitians.

Additional Information

For a list of academic programs and other information about preparing for a professional career in dietetics, contact:

- The American Dietetic Association, 216 W. Jackson Blvd., Suite 800, Chicago, IL 60604-6995. Internet: <http://www.eatright.org/careers>.

Dietetic Technicians

Work Description

A *dietetic technician, registered (DTR)*, works as a member of the food service, management, and health care team, independently or in consultation with a registered dietitian. The dietetic technician supervises support staff, monitors cost-control procedures, interprets and implements quality assurance procedures, counsels individuals or small groups, screens patients/clients for nutritional status, and develops nutrition care plans. The dietetic technician helps to supervise food production and service; plans menus; tests new products for use in the facility; and selects, schedules, and conducts orientation programs for personnel. The technician may also be involved in selecting personnel and providing on-the-job training. The dietetic technician obtains, evaluates, and uses dietary histories to plan nutritional care for patients. Using this information, the technician guides families and individuals in

selecting food, preparing it, and planning menus based on nutritional needs. The dietetic technician has an active part in calculating nutrient intakes and dietary patterns.

Work Environment

Most dietetic technicians work 40 hours per week. They may work weekends as well as early or late shifts, depending on the facility in which they are employed. They spend some of their time in clean, well-lighted, ventilated areas, and some time in hot, steamy kitchens and serving areas. They may be on their feet for most of their working day, and may be required to do some lifting.

Employment Opportunities

Job opportunities for dietetic technicians vary depending on the geographic area and the number of hospitals within that area. Job opportunities are available in hospitals, clinics, day care centers, restaurants, health clubs, WIC programs, Meals on Wheels programs, community health programs, and nursing homes. Dietetic technicians also work in university food service operations, some commercial food establishments, correctional facilities, public schools, health clubs, weight management clinics, food companies, and contract food management companies.

Educational and Legal Requirements

DTRs are trained in food and nutrition and are an integral part of health care and food service management teams. They must meet the following criteria to earn the DTR credential:

- *Achieve at least a two-year associate's degree* at a U.S. regionally accredited college or university.
- *Complete a dietetic technician program* approved by the Commission on Accreditation for Dietetics Education of the ADA, including 450 hours of supervised practice experience in various community programs, health care, and food service facilities.

- *Pass a national, written examination* administered by the Commission on Dietetic Registration.
- *Complete continuing professional educational requirements* to maintain registration.

Employment Trends

The job market for DTRs is assumed to be similar to that for dietitians and nutritionists. According to the U.S. Bureau of Labor Statistics, employment of dietitians and nutritionists is expected to grow about as fast as the average for all occupations through the year 2008 because of increased emphasis on disease prevention, a growing and aging population, and public interest in nutrition. Employment in hospitals is expected to show little change because of anticipated slow growth and reduced lengths of hospital stay. In contrast, faster growth is anticipated in nursing homes, residential care facilities, and physician clinics.

Earnings

According to the ADA's 1997 Membership Database, among entry-level DTRs employed full-time for five years or less in their primary position, 63 percent reported incomes between \$20,001 and \$30,000, and 15 percent earned between \$30,001 and \$40,000. Salary levels vary with region, employment setting, geographical location, scope of responsibility, and supply of DTRs.

Related Occupations

Workers with duties similar to those of dietetic technicians include associate-degree nurses, licensed practical nurses, and dietary managers.

Additional Information

The ADA's Web site (www.eatright.org) includes additional information about careers in dietetics. Access this information directly at www.eatright.org/join/careers.html.

Names, addresses, and directors' names of educational programs that are accredited or approved by the Commission on Accreditation for Dietetics Education of the ADA are on-line at <http://www.eatright.org/cade/>. The list of programs should serve as a starting point only, to determine what types of programs are offered in specific geographic locations. Details of program content and admission requirements vary from one program to another. For additional information, such as a course catalog or list of required nutrition classes, contact the CADE-accredited/approved programs that you are interested in attending.

For other career guidance information, contact:

- ADA Careers and Student Services, 216 West Jackson Boulevard, Suite 800, Chicago, IL 60606-6995. E-mail: education@eatright.org.

Dietetic Assistants

The *dietetic assistant* is the third level among personnel involved in the provision of nutritional care. The amount of involvement in patient care depends on education, training, and work experience.

The dietetic assistant, under direct supervision from a food service manager, dietetic technician, or dietitian, works in preparation and serving areas of hospitals and other health care facilities. The government, community agencies, restaurants, schools, universities, and the military also offer opportunities.

Dietetic assistant positions have no educational requirements. Assistants frequently receive on-the-job training only, although it is now common practice in accredited facilities to send the worker to a minimum of 45 clock hours of formal classroom/laboratory classes. These classes are often held at junior and community or technical colleges and taught by a registered dietitian. After having passed the course, the student receives a certificate. The assistant must be employed by a health or community agency such as Head Start, school lunch program, or extended care facility to be eligible to take these courses.

Most dietetic assistants are assigned a preceptor who observes and assists them with assigned tasks or projects at the workplace. The assistant performs routine duties as assigned by the manager, dietetic technician, or dietitian according to the job specification.

Others who perform similar tasks are nursing assistants and home health aides. Salaries vary widely within and among geographic locations.

Because requirements for employment vary widely in this job, prospective employees are advised to ask the agency to which they apply if certification will be an expected part of the job. Employers who want certified dietetic assistants are often willing to pay all or a part of the student's fees.

Dietetic assistants may progress up the career ladder by completing additional coursework and becoming eligible to take an entrance examination given by the Dietary Managers Association to be promoted to dietary manager of a food service. Those who do not belong to the association may take the additional approved courses and obtain jobs as food service supervisors. Accredited health care facilities are required to have a person with one or more advanced courses as the head of the dietary department.

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Chapter 12



Optometry

Key Terms

Optometrists	Video display terminals
Ophthalmologists	Corrective lens
Dispensing opticians	Apprenticeship program
Franchises	Paraoptometrics
Doctor of Optometry	

Optometrists

Work Description

More than half the people in the United States wear glasses or contact lenses. *Optometrists* (doctors of optometry) provide much of the vision care these people need.

Optometrists should not be confused with either ophthalmologists or dispensing opticians. *Ophthalmologists* are physicians (doctors of medicine or osteopathy) who specialize in medical diagnosis and treatment of vision disorders, especially diseases and injuries to the eye. Ophthalmologists may perform eye surgery and prescribe drugs or other eye treatment, as well as lenses. *Dispensing opticians* fit and adjust eyeglasses and may in some states fit contact lenses according to prescriptions written by ophthalmologists or optometrists, but they do not examine eyes or prescribe treatment.

Optometrists are primary eye care providers who examine people's eyes to diagnose and in some cases treat vision problems and eye disease. They use instrumentation and observation to evaluate eye health and to test patients' visual acuity, depth and color perception, and their ability to focus and coordinate the eyes. They analyze test results and develop a treatment plan. Optometrists prescribe eyeglasses, contact lenses, vision therapy, and low-vision rehabilitation. They administer drugs to patients to aid in the diagnosis of eye vision problems and prescribe drugs to treat some eye diseases. Optometrists often provide preoperative and postoperative care to cataract, laser vision correction, and other eye surgery patients. They also diagnose conditions caused by systemic diseases such as diabetes and high blood pressure, and they refer patients to other health practitioners as needed.

Although most optometrists are in general practice, some specialize in work with the elderly or with children. Others work with partially sighted persons, who use microscopic or telescopic lenses. Still others concentrate on contact lenses or vision therapy. Optometrists teach, do research, consult, and serve on health advisory committees of various kinds.

Work Environment

Optometrists work in places—usually their own offices—that are clean, well-lighted, and comfortable. Their work requires much attention to detail. Optometrists who are self-employed have considerable flexibility in setting their hours of work. They may offer Saturday or evening hours to suit the needs of their patients, and many practitioners choose to work more than 40 hours per week. Emergency calls, once uncommon, have increased with the passage of therapeutic drug laws expanding optometrists' ability to prescribe medications.

Employment Opportunities

According to most recent data, optometrists hold about 38,000 jobs. The number of jobs is greater than the number of practicing optometrists because some optometrists hold two jobs or maintain two offices. For example, an optometrist may have a full-time private practice and also work part-time in another practice, clinic, or vision care center.

Although the majority of optometrists are in solo practice, a growing number are in partnership or group practices. This trend, especially pronounced among younger optometrists, is associated with education-related indebtedness and the high cost of setting up solo practice. For the same reasons, some optometrists work as salaried employees in the offices of established practitioners. Salaried jobs with health maintenance organizations (HMOs) and the Veterans Administration are becoming more attractive.

Some optometrists have chosen to work in optical treatment stores rather than to operate a private practice. Optometrists who work in these vision care centers are not always salaried employees;

the trend has been for optometrists to buy *franchises* and operate as independent business owners rather than as employees of the chain.

Some optometrists teach in schools of optometry. Others act as consultants to industrial safety programs, insurance companies, manufacturers of ophthalmic products, and other related businesses.

Educational and Legal Requirements

All states and the District of Columbia require that optometrists be licensed. Applicants for a license must have a *Doctor of Optometry* degree and pass a written and clinical state board examination. In many states, applicants can substitute the examination of the National Board of Examiners in Optometry, usually taken during the student's academic career, for part or all of the written state examination. Optometrists must earn continuing education credits in optometry to renew their licenses. Licenses are renewed every one to two years.

The Doctor of Optometry degree requires completion of a four-year professional degree program at an accredited optometric school preceded by at least three years of preoptometric study at an accredited college or university (most optometry students hold a bachelor's degree). In 1999, there were 17 U.S. schools and colleges of optometry accredited by the Council on Optometric Education of the American Optometric Association.

Optometry programs include classroom and laboratory study of health and visual sciences, and clinical training in the diagnosis and treatment of eye disorders. Included are courses in pharmacology, optics, biochemistry, and systemic disease.

Requirements for admission to schools of optometry include courses in English, mathematics, physics, chemistry, and biology or zoology. Some schools also require courses in psychology, social studies, literature, philosophy, and foreign language. All applicants must take the Optometric Admissions Test (OAT). Competition for admission is keen.

Because most optometrists are self-employed, business ability, self-discipline, and the ability to deal with patients tactfully are necessary for success.

Optometrists wishing to teach or perform research may study for a master's degree or Ph.D. in visual science, physiological

optics, neurophysiology, public health, health administration, health information and communication, or health education. One-year postgraduate clinical residency programs are available for optometrists who wish to specialize in certain aspects of optometry, including family practice optometry, pediatric optometry, geriatric optometry, low-vision rehabilitation, vision training, contact lenses, hospital-based optometry, and primary care optometry.

Employment Trends

Employment of optometrists is expected to grow about as fast as the average for all occupations through the year 2008 due to anticipated changes in the size and age structure of the population. Of central importance is the maturing of the large baby boom generation, together with very rapid growth in the elderly population in the years immediately ahead. Visits to both optometrists and ophthalmologists are more frequent for persons older than age 45, reflecting the onset of vision problems in middle age and increased likelihood in old age of glaucoma, diabetes, and hypertension. Greater recognition of the importance of vision care on the part of an increasingly well-educated population is expected to boost demand for optometric services. The widespread use of computers and *video display terminals* (VDTs) in the workplace and at home may also increase demand for optometric services. VDTs have been suspected of causing eyestrain and may aggravate vision problems, leading users to seek professional care and employers to seek consultation.

Employment of optometrists would grow more rapidly were it not for anticipated productivity gains, which will allow each optometrist to see more patients. These gains will result from greater use of optometric assistants and other support personnel, and the introduction of new equipment.

Replacement needs are expected to produce additional job openings in the years ahead. In this occupation, replacement needs arise almost entirely from retirements and deaths. Optometrists, like other health practitioners, have a strong attachment to their profession and generally remain in practice until they leave the labor force; few transfer to other occupations.

Earnings

According to the latest information, median annual earnings of salaried optometrists were \$82,860 in recent years. The middle 50 percent earned between \$60,310 and \$111,520 per year. The lowest 10 percent earned less than \$24,820 and the highest 10 percent earned more than \$123,770 per year. Salaried optometrists tend to earn more initially than do optometrists who set up their own independent practice. In the long run, those in private practice usually earn more.

According to the American Optometric Association, new optometry graduates in their first year of practice earned median net incomes of \$55,000 in 1998. Overall, optometrists earned median net incomes of between \$115,000 to \$120,000 in 2000.

Related Occupations

Workers in other occupations who apply logical thinking and scientific knowledge to prevent, diagnose, and treat disease, disorders, or injuries in humans or animals include chiropractors, dentists, physicians, podiatrists, veterinarians, speech-language pathologists, and audiologists.

Additional Information

For information on optometry as a career and a listing of accredited optometric educational institutions, as well as required preoptometry courses, contact:

- American Optometric Association, Educational Services, 243 North Lindbergh Blvd., St. Louis, MO 63141-7881. Internet: <http://www.aoanet.org>.
- Association of Schools and Colleges of Optometry, 6110 Executive Blvd., Suite 510, Rockville, MD 20852. Internet: <http://www.opted.org>.

The board of optometry in each state can supply information on licensing requirements.

For information on specific admission requirements and sources of financial aid, contact the admissions officer of individual optometry schools.

Dispensing Opticians

Work Description

Dispensing opticians fit eyeglasses and contact lenses, following prescriptions written by ophthalmologists or optometrists. (The work of optometrists is described earlier in this chapter. See Chapter 7 on physicians for information about ophthalmologists.) They examine written prescriptions to determine corrective lens specifications. They recommend eyeglass frames, lenses, and lens coatings after considering the prescription and the customer's occupation, habits, and facial features. Dispensing opticians measure clients' eyes, including the distance between the centers of the pupils and the distance between the eye surface and the lens. For customers without prescriptions, dispensing opticians may use a lensometer to record the present eyeglass prescription. They also may obtain a customer's previous record or verify a prescription with the examining optometrist or ophthalmologist.

Dispensing opticians prepare work orders that give ophthalmic laboratory technicians the information needed to grind and insert lenses into a frame. The work order includes lens prescriptions and information on lens size, material, color, and style. Some dispensing opticians grind and insert lenses themselves. After the glasses are made, dispensing opticians verify that the lenses have been ground to specifications. Then they may reshape or bend the frame, by hand or using pliers, so that the eyeglasses fit the customer properly and comfortably. Some also fix, adjust, and refit broken frames. They instruct clients about adapting to, wearing, or caring for eyeglasses.

Some dispensing opticians specialize in fitting contacts, artificial eyes, or cosmetic shells to cover blemished eyes. To fit contact lenses, dispensing opticians measure eye shape and size, select the type of contact lens material, and prepare work orders specifying the prescription and lens size. Fitting contact lenses requires considerable skill, care, and patience. Dispensing opticians observe

customers' eyes, corneas, lids, and contact lenses with special instruments and microscopes. During several visits, opticians show customers how to insert, remove, and care for their contacts, and how to ensure the fit is correct.

Dispensing opticians keep records on customer prescriptions, work orders, and payments; track inventory and sales; and perform other administrative duties.

Work Environment

Dispensing opticians work indoors in pleasant, quiet surroundings that are well-lighted and well-ventilated. Because they sell and service eye lenses, they deal with customers most of the time. They spend part of their time on their feet. If they work in a laboratory where eyeglasses are made, they need to take precautions to guard against the hazards associated with cutting glass and handling various chemical solutions and machines with moving parts. Dispensing opticians generally work a 40-hour week, although a 45- or 50-hour week is not uncommon. Some, especially those employed in retail shops in large shopping centers, work in the evenings and on Saturdays. Some work part-time.

Many experienced dispensing opticians go into business for themselves. Others become managers of retail optical stores or sales representatives for wholesalers or manufacturers of eyeglasses or lenses.

Employment Opportunities

According to most recent data, dispensing opticians hold about 71,000 jobs. Most work full-time.

About 50 percent work for ophthalmologists or optometrists who sell glasses directly to patients. Many also work for optical shops or for department stores, drugstores, and other retail outlets. Firms in this segment of the optometric retail trade cater to consumers' desire for fast and convenient service by offering one-stop shopping: Customers can have their eyes examined, choose frames,

and have glasses made on the spot. These stores employ not only dispensing opticians but also ophthalmic laboratory personnel.

Educational and Legal Requirements

Most dispensing opticians learn their skills on the job. However, employers generally prefer applicants who are familiar with the trade, and an increasing number of trainees have some formal training in optical dispensing and fabricating. On-the-job training in dispensing work may last several years and usually includes instruction in optical mathematics, optical physics, and the use of precision measuring instruments and other machinery and tools. Training programs vary from employer to employer. In large companies, on-the-job training is structured much like an apprenticeship program, while training in small establishments is largely informal.

Employers considering applicants for entry-level jobs in optical dispensing look for high school graduates who have had courses in science and mathematics. Knowledge of physics, algebra, geometry, and mechanical drawing is particularly valuable. Previous experience in a related area is an asset. Because dispensing opticians deal directly with the public, they should be tactful and have a pleasant personality. Communication skills are highly valued.

In the 22 states that offer a license to dispensing opticians, individuals without postsecondary training work from two to four years in *apprenticeship programs*. Apprenticeship or formal training is offered in most states as well.

Apprentices receive technical training and learn office management and sales. Under the supervision of an experienced optician, optometrist, or ophthalmologist, apprentices work directly with patients, fitting eyeglasses and contact lenses. In the 21 states requiring licensure, information about apprenticeships and licensing procedures is available from the state board of occupational licensing.

Formal opticianry training is offered in community colleges and a few colleges and universities. In 2000, there were 25 programs accredited by the Commission on Opticianry Accreditation that awarded two-year associate degrees in ophthalmic dispensing

or optometric technology. There are also shorter programs of one year or less. Some states that license dispensing opticians allow graduates to take the licensure exam immediately upon graduation. Others require a few months to a year of experience. A small number of opticians learn their trade in the armed forces.

Dispensing opticians may apply to the American Board of Opticianry and the National Contact Lens Examiners for certification of their skills. Certification must be renewed every three years through continuing education.

Employment Trends

Employment in this occupation is expected to increase as fast as the average for all occupations through the year 2008 in response to sharply rising demand for corrective lenses, a result of demographic trends. Not only is the population growing, but the number of middle-aged and elderly persons is also projected to increase substantially. Middle age is a time when many persons begin using corrective lenses for the first time, and elderly persons require more vision care, on the whole, than do others.

Vision screening programs and other efforts to increase public awareness of eye care are also likely to stimulate demand. Thanks in part to advertising by optical companies, less stigma is now attached to wearing eyeglasses than in the past. Industrial safety precautions may require more safety goggles and glasses. Increased participation in sports may require some people to use special lenses and frames. Fashion, too, influences demand. The growing variety of frame styles and colors—as well as the increasing popularity of contact lenses—encourages people to buy more than one pair of corrective lenses. Finally, demand is expected to grow in response to products such as photochromic lenses (glasses that become sunglasses in sunlight), now available in plastic as well as glass; tinted lenses; bifocal contact lenses; and extended-wear contact lenses.

This occupation is vulnerable to changes in the business cycle, with employment falling somewhat during downturns and rising during periods of economic recovery. As is generally the case, however, most openings will arise from the need to replace experienced workers who change occupations or stop working.

Employment opportunities should be good for dispensing opticians who have an associate's degree in opticianry. Opportunities will be best in metropolitan areas. Not only are there more optical shops and chain stores in cities and suburban areas, but retail optical shops in small communities tend to be small establishments with few employees. Often the owners are opticians and handle all the optical dispensing without assistance.

Earnings

Most recently, median annual earnings of dispensing opticians were \$24,430. The middle 50 percent earned between \$19,200 and \$31,770 per year. The lowest 10 percent earned less than \$15,900 and the highest 10 percent earned more than \$39,660 per year. According to the most recent statistics, median annual earnings in the industries employing the largest number of dispensing opticians were as follows:

Offices and clinics of medical doctors	\$28,220
Retail stores, not elsewhere classified	25,120
Offices of other health care practitioners	22,670

Related Occupations

Other workers who deal with customers and perform delicate work include jewelers, locksmiths, ophthalmic laboratory technicians, orthodontic technicians, dental laboratory technicians, prosthetics technicians, camera repairers, and watch repairers.

Additional Information

For general information about this occupation, contact:

- Opticians Association of America, 10341 Democracy Lane, Fairfax, VA 22030-2521. Internet: <http://www.opticians.org>.

For general information about a career as a dispensing optician and a list of accredited training programs, contact:

- Commission on Opticianry Accreditation, 10341 Democracy Lane, Fairfax, VA 22030-2521. Internet: <http://www.coaccreditation.com>.

For general information on opticianry and a list of home-study programs, seminars, and review materials, contact:

- National Academy of Opticianry, 8401 Corporate Drive, Suite 605, Landover, MD 20785. Internet: <http://www.nao.org>.

Paraoptometrics

Work Description

The optometrist's role in recent years has been refined by the addition of auxiliary personnel in clinical practice. *Paraoptometrics* are men and women who extend the optometrist's abilities by performing routine and technical tasks related to visual care. That is, they are optometric technicians and assistants. Their roles and functions are similar and can be discussed together.

An assistant's main tasks are scheduling appointments, preparing and filing patients' records, billing, receiving fees, and managing an efficient, professional office. He or she may inform patients about examination procedures or special tests and endeavor to put each patient at ease and build confidence in treatment. Assistants sometimes aid patients in doing exercises that help overcome difficulties in focusing or poor coordination.

Technicians may perform preliminary tests such as testing the ability of patients to see letters or numbers of various sizes at a specified distance. They may measure corneal strength, measure lens power in old and new prescriptions, take facial and frame measurements, and help the patient select frames. They also instruct patients on the correct care and wear of contact lenses. Under supervision, technicians may work with patients who require special therapeutic devices such as lenses for postcataract surgery, low-vision aids, or contact lenses. They may work with patients who have vision motor anomalies, perceptual difficulties, and poor hand-eye coordination or reading problems.

Work Environment

Paraoptometric personnel work in the offices of optometrists, which are clean, well-lighted, and comfortable. Their work requires attention to detail, and they must be flexible in their working hours to suit the needs and working hours of the optometrist by whom they are employed. Generally they work a 40-hour week.

Employment Opportunities

The demand for paraoptometrics increases as the need for optometric services increases. The trend is particularly favorable in partnership or group practices and in vision care centers.

Educational and Legal Requirements

A high school graduate with a strong background in algebra, bookkeeping, typing, English, and science courses is most suited to be a paraoptometric technician.

There are presently some 85 programs in colleges and optometry schools that train paraoptometrics. Optometric assistants are trained in a formal one-year program of study. These programs cover courses in anatomy, physiology, theory and use of contact lenses, and training for teaching patients eye exercises. Classroom theory is combined with experience in selected optometrists' offices or in clinics. Optometric technicians have completed a required two-year formal program in a community or junior college, which combines the general education requirements of the college with the required technical and science courses. The programs may vary from college to college.

Employment Trends

Demand for graduates of formal one- or two-year training programs is great. The need for people in these fields is growing as optometrists' desire to employ them grows. Employment in the

area is expected to grow faster than average because of the changing needs of optometrists in practice and the increasing need for eye care services. Increased growth of job openings is due to the rising proportion of older people in the total population, increasing size of the population, and an increasingly well-educated population that demands sophisticated vision services.

Earnings

Salaries for paraoptometric personnel vary according to academic and technical qualifications, geographic region, and the type of optometrist employing them. Annual salaries for assistants are in the \$12,000 to \$15,000 range; technicians' salaries range from \$14,000 to \$18,000 per year.

Related Occupations

Workers in other occupations who work under supervision with patients and carry out related functions as specified in their description include dental assistants and technicians, medical assistants, office managers, physical therapy assistants and technicians, and pharmacy assistants and technicians.

Additional Information

For further information on paraoptometrics, write to:

- Opticians Association of America, 10341 Democracy Lane, P.O. Box 10110, Fairfax, VA 22030.
- National Academy of Opticianry, 10110 Martin Luther King Jr. Hwy., Suite 112, Bowie, MD 20720-4299.

Chapter 13



Physician Assistants

Key Terms

Middle-level health workers

Biological sciences

Primary care

Telemedicine

A Relatively New Profession

The occupation of physician assistant (PA) came into being during the mid-1960s in response to a shortage of primary care physicians. The purpose of the PA in primary care is to help physicians provide personal health services to patients under their care. They are skilled health practitioners, qualified through academic and clinical training to serve patients with and under the supervision of a doctor of medicine (M.D.) or osteopathy (D.O.) who is responsible for the performance of that assistant. PAs are also responsible for their own actions. They are *middle-level health workers* with skills beyond those of a registered nurse and less than those of a licensed physician.

Physician Assistants

Work Description

Physician assistants are formally trained to provide routine diagnostic, therapeutic, and preventive health care services under the direction and supervision of a physician. They take medical histories, examine patients, order and interpret laboratory tests and x rays, and make preliminary diagnoses. They also treat minor injuries by suturing, splinting, and casting. PAs record progress notes, instruct and counsel patients, and order or carry out therapy. In 46 states and the District of Columbia, physician assistants may prescribe medications. PAs may have managerial duties, too. Some order medical and laboratory supplies and equipment; others supervise technicians and assistants.

Physician assistants always work under the supervision of a physician. The extent of supervision, however, depends on the

location. For example, PAs working in rural or inner-city clinics where a physician may be available just one or two days each week may provide most of the health care for patients and consult with the supervising physician and other medical professionals as needed or required by law. Other PAs may make house calls or go to hospitals and nursing homes to check on patients and report to the physician.

Physician assistants assist physicians in a variety of practice settings and specialty areas. The most important practice settings are physicians' offices, hospitals, and clinics. Leading specialties using PAs are family practice, internal medicine, general surgery, emergency medicine, pediatrics, orthopedic surgery, thoracic surgery, and geriatrics.

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

Work Environment

Although PAs generally work in a comfortable, well-lighted environment, they often must stand for long periods and do considerable walking.

The work week and schedule vary according to practice setting. Some emergency room PAs work 24-hour shifts twice weekly, and others work three 12-hour shifts each week. The work week of PAs who work in physicians' offices may include weekends, night hours, or early morning hospital rounds to visit patients. PAs in clinics usually work a five-day, 40-hour week.

Employment Opportunities

According to most recent data, physician assistants hold about 58,000 jobs. PAs most commonly work in office-based medical practices and clinics, or in hospitals. A small but growing number work for HMOs, public health clinics, and institutions such as prisons, rehabilitation centers, nursing homes, and facilities for the mentally retarded or disabled.

According to the American Academy of Physician Assistants, there were about 40,469 certified PAs in clinical practice, as of

January 2000. Sixty-seven percent of jobs for PAs were in the offices and clinics of physicians, dentists, or other health practitioners. About 21 percent were in hospitals. The rest were mostly in public health clinics, nursing homes, prisons, home health care agencies, and the Department of Veterans Affairs.

Despite efforts to encourage physicians to practice where they are needed most, many rural areas and inner cities remain underserved. About one-third of PAs provide health care to communities having fewer than 50,000 residents and where physicians may be in limited supply.

Although most PAs in medically underserved areas are associated with physicians in private practice, some work in clinics, where a physician may be available just one or two days each week. For the rest of the week, a PA working with one or more nurses, technicians, or medical assistants provides all health care services. PAs in remote clinics frequently consult the supervising physician by phone.

Educational and Legal Requirements

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

Admission requirements to PA programs vary. The minimum requirements are two years of college and work experience in one of the health professions. Students should take courses in biology, English, chemistry, math, psychology, and social sciences. More than half of all applicants hold a bachelor's or master's degree. Many applicants are former emergency medical technicians, other allied health professionals, or nurses and have more than four years of health care experience.

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

Because a large percentage of patients who seek *primary care* services have behavioral as well as biological problems, a balance of studies between the behavioral and *biological sciences* is advised.

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

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

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

Individuals planning a career as a physician assistant should be intelligent, conscientious, and willing to study hard throughout their career to keep up with medical advances. They should exhibit leadership, self-confidence, and emotional stability. When necessary, they are expected to respond correctly to life-threatening situations. A pleasant personality, patience, and the ability to deal with all kinds of people are essential. PAs must be able to function well in cooperation with doctors, nurses, and other professional staff.

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

Employment Trends

Employment of PAs is expected to grow much faster than the average for all occupations through the year 2008 due to anticipated expansion of the health services industry and an emphasis on cost containment. Physicians and institutions are expected to employ more PAs to provide primary care and to assist with medical and surgical procedures because PAs are cost-effective and productive members of the health care team. Physician assistants can relieve physicians of routine duties and procedures. *Telemedicine*—using technology to facilitate interactive consultations between physicians and physician assistants—will also expand the use of physician assistants.

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

Earnings

According to the most recent data from the American Academy of Physician Assistants, median income for all physician assistants was \$65,177; median income for first-year graduates was \$56,977. Income varies by specialty, practice setting, geographical location, and years of experience.

Related Occupations

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

Additional Information

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

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

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

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

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

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

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Chapter 14



Communication Impairments

Key Terms

Language disorder Grammatical patterns Speech disorder Hearing impairment Speech-language pathologists Communication disorders Audiologists Consultants	Telecommunications Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) Certificate of Clinical Competence in Audiology (CCC-A) Rehabilitative services
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Speech, Language, and Hearing Impairments

Speech, language, and hearing impairments hinder communication and can cause problems throughout life. Children who have difficulty speaking, hearing, or understanding language, for instance, cannot participate fully with others in play or classroom activities. Sometimes these children are thought to have mental or emotional problems when, in fact, the problem is one of language or hearing. Adults with speech, language, or hearing impairments may have problems on the job and may withdraw socially to avoid frustration and embarrassment. The aging process almost invariably brings some degree of hearing loss. Severe loss, if not treated, can result in diminished pleasure in everyday activities, social isolation, and, even worse, wrongful labeling of elderly people as demented or “confused.”

A *language disorder* is defined as an inability to use the symbols of language through appropriate *grammatical patterns*, proper use of words and their meanings, and the correct use of speech sounds. A *speech disorder* is identified by an individual’s difficulty in producing speech sounds, controlling voice production, and maintaining speech rhythm. Individuals with speech and lan-

Many thanks to Franklin H. Silverman, Ph.D., professor of speech pathology at Marquette University and clinical professor of rehabilitation medicine at The Medical College of Wisconsin, for his assistance in revising and updating this chapter.

guage disorders also include those with physical conditions such as a stroke or head injury, cleft palate, or cerebral palsy. Other causes of speech and language disorders are hearing loss, viral diseases, certain drugs, poor speech and language models in the home, or a short attention span.

Hearing impairment has many forms. It can be an inability to hear speech and other sounds clearly, even though the sounds are sufficiently loud. It can be an inability to understand and use speech in communication, though speech is sufficiently loud and can be heard clearly. It can be the inability to hear speech and other sounds loudly enough, which is considered a loss of hearing sensitivity. A person can experience one or more of these three types of hearing impairments in combination. Thus, hearing impairment is more complex than simply the inability to hear speech or other sounds well enough. Some hearing impairments can be subtle and difficult to recognize. Hearing impairment can be a serious problem because the ability to communicate is our most human characteristic. Many individuals with hearing impairments experience isolation in social, emotional, and educational areas. Hearing impairments can be caused by viral infections, head injury, birth defects, excessively loud noises, drugs, tumors, heredity, and the aging process. Hearing impairment is the disorder most frequently reported to physicians. Approximately half of the people in the United States who have hearing impairments are 65 or older.

Speech-Language Pathologists and Audiologists

Work Description

Although speech-language pathology and audiology are separate disciplines, they are so interrelated that to be competent in one of these fields one must be familiar with both.

Speech-language pathologists assess, treat, and help to prevent speech, language, cognitive, communication, voice, swallowing, fluency, and other related disorders. *Audiologists* identify, assess, and manage auditory, balance, and other neural systems.

Speech-language pathologists work with people who cannot make speech sounds or cannot make them clearly; those with

speech rhythm and fluency problems, such as stuttering; people with voice quality problems, such as inappropriate pitch or harsh voice; those with problems understanding and producing language; and those with cognitive communication impairments, such as attention, memory, and problem-solving disorders. They may also work with people who have oral motor problems that cause eating and swallowing difficulties.

Speech and language problems can result from hearing loss, brain injury or deterioration, cerebral palsy, stroke, cleft palate, voice pathology, mental retardation, or emotional problems. Problems can be congenital, developmental, or acquired. Speech-language pathologists use written and oral tests as well as special instruments to diagnose the nature and extent of impairment and to record and analyze speech, language, and swallowing irregularities. They also develop an individualized plan of care, tailored to each patient's needs. For individuals with little or no speech capability, speech-language pathologists select augmentative alternative communication methods, including automated devices and sign language, and teach their use. They teach these individuals how to make sounds, improve their voices, or increase their language skills to communicate more effectively. Speech-language pathologists help patients develop, or recover, reliable communication skills so that patients can fulfill their educational, vocational, and social roles.

Most speech-language pathologists provide direct clinical services to individuals with such *communication disorders*. In speech and language clinics, they may independently develop and carry out treatment programs. In medical facilities, they may work with physicians, social workers, psychologists, and other therapists to develop and execute treatment plans. In schools, speech-language pathologists develop individual or group programs, counsel parents, and may assist teachers with classroom activities.

Speech-language pathologists keep records on the initial evaluation, progress, and discharge of clients. This effort helps pinpoint problems, tracks client progress, and justifies the cost of treatment when applying for reimbursement. Speech-language pathologists counsel individuals and their families concerning communication disorders and discuss how to cope with the stress and misunderstanding that often accompany them. They also work with family members to recognize and change behavior patterns that impede communication and treatment and show them communication-enhancing techniques to use at home.

Some speech-language pathologists conduct research on how people communicate. Others design and develop equipment or techniques for diagnosing and treating speech problems.

Audiologists identify, assess, and treat hearing, balance, and related problems. They also play an important role in preventing hearing problems. They use audiometers and other testing devices to measure the loudness at which a person begins to hear sounds, the ability to distinguish between sounds, and other tests of the nature and extent of hearing loss. Audiologists may coordinate these results with medical, educational, and psychological information, make a diagnosis, and determine a course of treatment.

Hearing disorders may result from causes such as birth trauma, viral infections, genetic disorders, exposure to loud noise, or aging. Treatment may include examining and cleaning the ear canal, fitting a hearing aid, auditory training, and instruction in speech or lip reading. Audiologists may recommend the use of amplifiers and alerting devices. Audiologists provide fitting and tuning of cochlear implants and provide the necessary rehabilitation for adjustment to listening with implant amplification systems. They also measure noise levels in workplaces and conduct hearing protection programs in industry, schools, and communities.

Audiologists provide direct clinical services to individuals with hearing or balance disorders. In audiology (hearing) clinics, they may independently develop and carry out treatment programs. Audiologists, acting in a variety of settings, work as members of interdisciplinary professional teams in planning and implementing service delivery for children and adults, from birth to old age. Similar to speech-language pathologists, audiologists keep records on the initial evaluation, progress, and discharge of clients. These records help pinpoint problems, track client progress, and justify the cost of treatment when applying for reimbursement.

Some audiologists may conduct research on types of, and treatment for, hearing, balance, and related disorders. Others design and develop equipment or techniques for diagnosing and treating these disorders.

Most speech-language pathologists and audiologists do some administrative work. However, directors of clinics and coordinators of speech, language, and hearing services in schools, health departments, or other government agencies may be totally occupied with administration.

Speech-language pathologists and audiologists keep a variety of records and reports, including initial evaluations, progress notes, physicians' reports, interdisciplinary notes, and discharge notes. Documentation must be maintained to track patients' progress and identify areas requiring more or less attention during subsequent visits. Finally, accurate records are needed to justify the cost of each treatment when applying for reimbursement.

Work Environment

Work is generally performed in clean, comfortable surroundings. Speech-language pathologists and audiologists spend most of their time at a desk or table. Although the job is not physically demanding, the attention to detail and intense concentration can be mentally exhausting. Most of these personnel work about 40 hours per week.

Speech-language pathologists and audiologists who work on a contract basis for nursing homes, home health agencies, or large school systems can expect to travel often and may deliver services in a variety of surroundings.

The occupation offers psychological rewards: Much satisfaction can be gained from seeing a client improve. Lack of progress, on the other hand, can be very frustrating.

Employment Opportunities

The most recent data show that speech-language pathologists and audiologists hold about 105,000 jobs. About one-half of these jobs are in preschool, elementary, and secondary schools or colleges and universities. Others are found in speech, language, and hearing centers; hospitals; nursing homes; offices of physicians; and outpatient care facilities.

Some speech-language pathologists and audiologists are in private practice and see self-referred patients or those referred to them by physicians or other health practitioners. Some are solo practitioners who operate their own offices; others are in multispecialty group practices.

Experienced speech-language pathologists and audiologists sometimes become *consultants*, either on a full-time basis or in addition to a primary job elsewhere. Consultants engage in a wide

variety of activities. Some provide clinical services to nursing home residents or home health clients. Others conduct workshops and in-service training, test noise levels for compliance with industrial and environmental health standards, do research, testify in legal proceedings, or act as advisers to manufacturers of *telecommunications* and other kinds of equipment used by individuals suffering from communication impairments.

Educational and Legal Requirements

Of the states that regulate licensing (45 for speech-language pathologists and 47 for audiologists), almost all require a master's degree or equivalent. Other requirements include 300 to 375 hours of supervised clinical experience, a passing score on a national examination, and nine months of postgraduate professional clinical experience. Thirty-six states have continuing education requirements for licensure renewal. Medicaid, Medicare, and private health insurers generally require a practitioner to be licensed to qualify for reimbursement.

Approximately 235 colleges and universities offer graduate programs in speech-language pathology. Courses cover anatomy and physiology of the areas of the body involved in speech, language, and hearing; the development of normal speech, language, and hearing; the nature of disorders; acoustics; and psychological aspects of communication. Graduate students also learn to evaluate and treat speech, language, and hearing disorders and receive supervised clinical training in communication disorders.

About 115 colleges and universities offer graduate programs in audiology in the United States. Coursework includes anatomy; physiology; basic science; math; physics; genetics; normal and abnormal communication development; assessment and treatment of auditory, balance, and neural systems; audiologic rehabilitation; and ethics.

Speech-language pathologists can acquire the *Certificate of Clinical Competence in Speech-Language Pathology (CCC-SIP)* offered by the American Speech-Language-Hearing Association, and audiologists can earn the *Certificate of Clinical Competence in Audiology (CCC-A)*. To earn a CCC, a person must have a graduate degree and 375 hours of supervised clinical experience, complete a 36-week postgraduate clinical fellowship, and pass a written

examination. According to the American Speech-Language-Hearing Association, as of 2007, audiologists will need to have a bachelor's degree and complete 75 hours of credit toward a doctoral degree to win certification. As of 2012, audiologists will have to earn a doctoral degree to be certified.

To work in public schools, individuals may have to complete not only the educational and other requirements for a teacher's certificate in the state in which they wish to work, but in some states may also have to complete some special requirements to work with handicapped children.

Speech and hearing specialists in public schools must have a practice certificate issued by the state educational agency. While some states permit individuals with a bachelor's degree in speech-language pathology or audiology to practice in public schools, they may be classified as special education teachers rather than as speech-language pathologists or audiologists.

Other than the academic requirements, individuals interested in speech-language pathology and audiology should have the communications skills necessary to explain test results, diagnosis, and modes of treatment in a manner easily understood by a wide variety of patients.

Speech-language pathologists and audiologists should be able to approach problems objectively and have concern for the needs of others. They also should have considerable patience and compassion, because a client's progress may be slow. In addition, they should be able to work with detail, to accept responsibility, to work independently, and to direct others.

With experience, some salaried speech-language pathologists and audiologists enter private practice. Others become directors or administrators of services in schools, hospitals, health departments, and clinics. Some become researchers.

Employment Trends

Employment of speech-language pathologists and audiologists is expected to increase faster than the average for all occupations through the year 2008. Anticipated changes in the size and age structure of the population will mean a substantial increase in the

number of people with communicative disorders. Because hearing loss is strongly associated with old age, rapid growth in the population aged 55 and older will cause the number of hearing-impaired persons to increase markedly. In addition, baby boomers are now entering middle age, when the possibility of neurological disorders and associated speech, language, and hearing impairments increases. Medical advances are also improving the survival rate of premature infants and trauma victims, who then need treatment.

While the aging of the population is expected to spur job growth, it is important to understand that clinical need alone does not govern demand. Other factors that influence job growth include the degree to which the public seeks treatment for speech, language, and hearing disorders; the extent of referrals from family members, teachers, nurses, physicians, and others; the price of speech and hearing services and ability to pay for them, whether out of pocket or through third-party reimbursement; legal mandates requiring services for the handicapped; and the impact of health care cost-containment measures.

Employment growth in health services would be even faster except for federal legislation imposing limits on reimbursement for therapy services; these constraints may continue to adversely affect the job market for therapy providers over the near term. Because of the effects of these provisions, the majority of expected employment growth in health services will occur in the second half of the projection period.

Employment in schools will increase in conjunction with growth in elementary and secondary school enrollments, including enrollment of special education students. Federal law guarantees special education and related services to all eligible children with disabilities. Greater awareness of the importance of early identification and diagnosis of speech, language, and hearing disorders will also increase employment in this sector.

The number of speech-language pathologists and audiologists in private practice will rise due to the increasing use of contract services by hospitals, schools, and nursing homes. In addition to job openings stemming from employment growth, some openings for speech-language pathologists and audiologists will arise from the need to replace personnel who leave this field.

Earnings

According to a 2000 survey by the American Speech-Language-Hearing Association, the median annual salary for full-time certified speech-language pathologists or audiologists who worked 11 or 12 months annually was \$44,000. For those who worked 9 or 10 months annually, median annual salaries for speech-language pathologists were \$41,000; for audiologists, \$45,000.

Related Occupations

Speech-language pathologists specialize in the prevention, diagnosis, and treatment of speech, language, and hearing problems. Workers in other rehabilitation occupations include occupational therapists, physical therapists, recreational therapists, rehabilitation counselors, optometrists, and psychologists.

Audiologists specialize in the prevention, diagnosis, and treatment of hearing problems. Workers in related occupations include neurologists, neonatologists, acoustical engineers, industrial hygienists, and other rehabilitation professionals.

Additional Information

State licensing boards can provide information on licensure requirements. State departments of education can supply information on certification requirements for those who wish to work in public schools.

General information on careers in speech-language pathology and audiology is available from:

- American Speech-Language-Hearing Association, 10801 Rockville Pike, Rockville, MD 20852. Internet: <http://www.asha.org>.

Information on a career in audiology is also available from:

- American Academy of Audiology, 8201 Greensboro Dr., Suite 300, McLean, VA 22102.

Chapter 15



Emergency Medical Services

Key Terms

Emergency medical technician-paramedics (EMT-Paramedics)	EMT-Basic
Advanced life support units	EMT-Intermediate
Trauma centers	Defibrillator
National Registry of Emergency Medical Technicians (NREMT)	Endotracheal intubation

High Drama in Health Care

Paramedics, or emergency medical technicians (EMTs), have a career that is often very dramatic, calling for immediate, calm application of the EMT's skills amid sometimes dangerous conditions. The September 11, 2001, attack on the World Trade Center was the most dramatic and deadly situation that paramedics, along with teams of firefighters and police, have ever faced, and they lived up to their potential and training with great heroism. If you watched the terrible events unfolding at that scene, you saw many of them in action as their ambulances drove through dangerous smoke, fire, and rubble to help rescue and transport the critically injured to hospitals. Their bravery in the face of peril speaks well of the crucial role played by paramedics in times of crisis as well as in everyday life.

Although not every call received by a paramedic team is a life-or-death situation, the potential for drama always exists. The remainder of this chapter details the dramatic as well as the mundane aspects of this health care profession.

EMT-Paramedics

Work Description

Emergency medical technician-paramedics (EMT-Paramedics) recognize, assess, and manage medical emergencies of acutely ill or injured persons in prehospital settings. They work under the direc-

tion of a physician, often through radio communication. EMT-Paramedics work principally in *advanced life support units* and ambulance services.

An automobile accident, a heart attack, a near drowning, an unscheduled childbirth, a poisoning, a gunshot wound—all these situations demand urgent medical attention. Seeing television portrayals of medical emergencies like these being handled has made millions of Americans aware of the crucial role played by emergency medical technicians.

A call from a dispatcher, typically a 911 operator, sends EMTs, who usually work in teams of two, to the scene of the emergency. Although speed is essential, EMTs obey traffic laws governing the operation of emergency vehicles. They also must know the best route to take in the face of traffic, road construction, and weather conditions.

Upon arriving at the scene, the driver parks the ambulance in a safe place to avoid accidents. If no police are present, the help of bystanders may be enlisted. In the case of an automobile accident, for instance, bystanders can help control traffic by placing road flares, removing debris, and redirecting traffic.

First, EMTs determine the nature and extent of the patient's illnesses or injuries and establish priorities for emergency treatment. They also determine whether the patient has epilepsy, diabetes, or other preexisting medical conditions, so they can provide the correct treatment. Operating under strict guidelines, EMTs give appropriate emergency care, including opening airways, treating for shock, restoring breathing, controlling bleeding, immobilizing fractures, bandaging wounds, assisting in childbirth, managing emotionally disturbed patients, and treating and resuscitating heart attack victims. Some procedures may be carried out only under the step-by-step direction of medical staff with whom the EMTs are in radio contact.

Emergency medical technicians are trained to distinguish one kind of emergency from another. Often a situation is serious enough to require a radio report directly to the hospital about the nature and extent of injuries or illness. EMTs may then be instructed by the hospital emergency staff to transmit vital signs and other information so that they can determine what treatment the EMTs should provide.

When patients are trapped, as is sometimes the case in an automobile or truck accident, EMTs face a double problem. First, they

must assess the patients' injuries and supply all possible emergency medical care while protecting them—as well as themselves and bystanders—from such dangers as chemicals and the possibility of fire. Then they must use the correct equipment and techniques to safely remove the patients. EMTs may use the radio or telephone to contact the dispatcher to request additional help or special rescue or utility services.

In case of death, EMTs notify the proper authorities and arrange for the protection of the deceased's property.

When patients must be transported to a hospital, EMTs place them on stretchers or other patient-handling devices, carry them to the ambulance and lift them in, and then secure both patient and stretcher for the trip. Then they drive to the hospital. They monitor the patient's vital signs en route and give additional care as needed or as directed by a physician with whom they have remained in radio contact.

Some EMTs work in large hospital *trauma centers* that use helicopters to transport critically ill or injured patients. Experience has shown that critically injured patients have a much better chance of survival if they can be transported to a trauma center within an hour of being injured. For this reason, and because operating costs are so high, helicopters are usually reserved only for patients who require the immediate or specialized attention available at a trauma center.

Upon arrival at the hospital, EMTs help transfer patients from the ambulance to the emergency department. They report their observations and care of the patients to the emergency department staff for diagnostic purposes and as a matter of record. They may help the emergency department staff.

One of the duties of EMTs is to maintain a clean, well-equipped ambulance. After each run, they replace the used linen, blankets, and other supplies, send reusable items to be sterilized, and carefully check all equipment so that the ambulance is ready for the next trip. If they have carried patients who have a contagious disease, they decontaminate the interior of the ambulance and report such calls to the proper authorities. In cases of radiation contamination, they seek special experts to remove the radiation. EMTs make sure that the ambulance is in good operating condition by checking the gasoline, oil, tire pressure, lights, siren, heater, brakes, and communications equipment before their shift begins.

Beyond these general duties, the specific responsibilities of EMTs and paramedics depend on their level of qualification and training. To make this determination, the *National Registry of Emergency Medical Technicians (NREMT)* registers emergency medical service (EMS) providers at four levels: First Responder, EMT-Basic, EMT-Intermediate, and EMT-Paramedic. Some states, however, do their own certification and use numeric ratings from 1 to 4 to distinguish levels of proficiency.

The lowest level—First Responders—are trained to provide basic emergency medical care because they tend to be the first persons to arrive at the scene of an incident. Many firefighters, police officers, and other emergency workers have this level of training.

The *EMT-Basic*, also known as EMT-1, represents the first component of the emergency medical technician system. An EMT-1 is trained to care for patients on accident scenes and on transport by ambulance to the hospital under medical direction. The EMT-1 has the emergency skills needed to assess a patient's condition and manage respiratory, cardiac, and trauma emergencies.

The *EMT-Intermediate* (EMT-2 and EMT-3) has more advanced training that allows administration of intravenous fluids, use of manual *defibrillators* to give life-saving shocks to a stopped heart, and use of advanced airway techniques and equipment to assist patients experiencing respiratory emergencies.

EMT-Paramedics (EMT-4) provide the most extensive prehospital care. In addition to the procedures already described, paramedics may administer drugs orally and intravenously, interpret electrocardiograms (EKGs), perform *endotracheal intubations*, and use monitors and other complex equipment. EMT-Paramedics maintain written records and dictate details relating to a patient's emergency care and the incident that led to that care.

Work Environment

Because EMTs must treat patients both indoors and outside, they are exposed to all kinds of weather. Much of their time is spent standing, kneeling, bending, and lifting. They may risk noise-induced hearing loss from ambulance sirens and back injuries from lifting patients. EMTs may be exposed to diseases such as hepatitis-B and AIDS, as well as violence from drug overdose victims

and brain-injured patients. The work is not only physically strenuous, but also emotionally draining—not surprising in a job that involves life-or-death situations. Individuals in this occupation are likely to experience considerable job-related stress.

Emergency medical technicians employed by fire departments often have a 50-hour workweek. Those employed by hospitals and police departments usually work 40 to 60 hours per week. Those in private ambulance service may work more. Some EMTs, especially those in police and fire departments, are on call for extended periods. Volunteer EMTs have varied work schedules, but many put in from 8 to 12 hours per week. Because many ambulance services function 24 hours a day, EMTs often work nights, weekends, and holidays. Irregular working hours add to the stress of the job.

Employment Opportunities

According to most recent data, EMTs and paramedics hold about 172,000 jobs. In addition, many more volunteer EMTs, especially in smaller cities, towns, and rural areas, work for departments where they may respond to only a few calls for service per month. Most career EMTs and paramedics work in metropolitan areas.

EMTs and paramedics are employed in a number of industries. Nearly half work in local and suburban transportation for private ambulance firms that transport and treat individuals on an emergency or nonemergency basis. About one-third of all EMTs and paramedics work in local government for fire departments and third-party service providers, in which emergency medical services are provided by an independent agency. Another fifth are found in hospitals, where they may work full-time within the medical facility or respond to calls in ambulances or helicopters to transport critically ill or injured patients.

Educational and Legal Requirements

Formal training and certification are needed to become an EMT or paramedic. All 50 states have developed a certification procedure. In 38 states and the District of Columbia, registration with the National Registry is required at some or all levels of certification.

Other states administer their own certification examination or provide the option of taking the National Registry examination. To maintain their certification EMTs and paramedics must reregister, usually every two years. To reregister, an individual must be working as an EMT and meet a continuing education requirement.

As noted earlier, training is offered at progressive levels: EMT-Basic, also known as EMT-1; EMT-intermediate, or EMT-2 and EMT-3; and EMT-Paramedic, or EMT-4.

The EMT-Basic represents the first level of skills required to work in the emergency medical system. Coursework typically emphasizes emergency skills such as managing respiratory, trauma, and cardiac emergencies and patient assessment. Formal courses are often combined with time in an emergency room or ambulance. The program also provides instruction and practice in dealing with bleeding, fractures, airway obstruction, cardiac arrest, and emergency childbirth. Students learn to use and maintain care for common emergency equipment, such as backboards, suction devices, splints, oxygen delivery systems, and stretchers. Graduates of approved EMT-Basic training programs who pass written and practical examinations administered by the state certifying agency or the National Registry of Emergency Medical Technicians earn the title of Registered EMT-Basic. The course is also a prerequisite for EMT-Intermediate and EMT-Paramedic training.

EMT-Intermediate training requirements vary from state to state. Applicants can opt to receive training in EMT-Shock Trauma, where the care giver learns to start intravenous fluids and give certain medications, or in EMT-Cardiac, which includes learning heart rhythms and administering advanced medications. Training commonly includes 35 to 55 hours of additional instruction beyond EMT-Basic coursework and covers patient assessment as well as the use of advanced airway devices and intravenous fluids. Prerequisites for taking the EMT-Intermediate examination include registration as an EMT-Basic, required classroom work, and a specified amount of clinical experience.

The most advanced level of training for this occupation is EMT-Paramedic. At this level, the care giver receives additional training in body function and more advanced skills. The Paramedic Technology program usually lasts up to two years and results in an associate degree in applied science. Such education prepares the graduate to take the National Registry of Emergency Medical Technicians examination and become certified as an

EMT-Paramedic. Extensive related coursework and clinical and field experience are required. Due to the longer training requirement, almost all EMT-Paramedics are in paid positions. Refresher courses and continuing education are available for EMTs and paramedics at all levels.

EMTs and paramedics should be emotionally stable, have good dexterity, agility, and physical coordination, and be able to lift and carry heavy loads. They also need good eyesight (corrective lenses may be used) with accurate color vision.

Advancement beyond the EMT-Paramedic level usually means leaving fieldwork. An EMT-Paramedic can become a supervisor, operations manager, administrative director, or executive director of emergency services. Some EMTs and paramedics become instructors, dispatchers, or physician assistants; others move into sales or marketing of emergency medical equipment. A number of people become EMTs and paramedics to assess their interest in health care and then decide to return to school and become registered nurses, physicians, or other health workers.

Employment Trends

Employment of EMTs is expected to grow much faster than average for all occupations through the year 2008. Conflicting forces will shape demand for these workers. On the one hand, population growth (very rapid growth in the number of older people in particular) is expected to lead to more jobs for EMTs. Developments in the field of emergency medicine may heighten demand as well. As more physicians and nurses specialize in emergency medicine, appropriately trained EMTs are likely to be used more effectively. Upgrading of the profession is expected to stimulate job growth for paid EMTs.

Other factors are likely to constrain job growth, however. Of foremost importance is the rising cost of training and equipping EMTs. Cost containment will doubtless remain a preoccupation of emergency medical service providers. The clinical benefits of providing emergency medical services will be weighed against the cost to a greater extent than was true in the past. Other factors that may adversely affect demand for EMTs include the termination of federal startup funds for community emergency medical services,

taxpayer resistance to increased local government expenditures, and the availability of unpaid volunteers.

Opportunities for paid EMTs are expected to be best in municipal governments and private ambulance services. In many localities, taxpayers have come to regard emergency medical services as a basic municipal service—as essential as police and fire protection, for example. However, instead of setting up new municipal programs or hiring additional city or county EMTs, a growing number of municipalities are contracting with private ambulance services to furnish emergency medical services. If this trend persists, employment prospects in private ambulance services should be especially favorable.

Competition for jobs will be keen in fire, police, and rescue squad departments because of attractive pay and benefits and good job security.

Demand for EMTs in hospitals probably will be constrained by the continued slowdown in hospital industry growth, together with administrators' efforts to phase out unprofitable programs and services. While some hospitals are likely to expand their emergency and trauma services—initiating helicopter services, for example—others will find that running an ambulance service is too expensive. Such hospitals may decide to leave the provision of emergency medical services to others in the community.

In addition to job openings created by expansion of emergency medical services, many additional openings will occur because of replacement needs, which are substantial in this occupation. Turnover is reported to be quite high, reflecting the stress and heavy responsibility the work entails, and the modest pay.

Prospects for qualified applicants should be excellent in the years ahead. Indeed, with the impending decline in the young adult population, which is the traditional source of supply for entry-level EMTs, employers may have to develop recruitment and retention programs.

Earnings

Earnings of EMTs depend on the employment setting and geographic location as well as the individual's training and experience. Median annual earnings of EMTs were \$22,460 in recent years. The middle 50 percent earned between \$17,930 and \$29,270 per year.

The lowest 10 percent earned less than \$14,660 and the highest 10 percent earned more than \$37,760. In local and suburban transportation, where private ambulance firms are located, the median salary was \$18,300 per year in recent years. In local government except education and hospitals, the median salary was \$21,900 per year. In hospitals, the median salary was \$19,900 per year.

Those in emergency medical services who are part of fire or police departments receive the same benefits as firefighters or police officers. For example, many are covered by pension plans that provide retirement at half pay after 20 or 25 years of service or if disabled in the line of duty.

Related Occupations

Other workers in occupations that require quick and level-headed reactions to life-or-death situations are registered nurses, physicians specializing in trauma, police officers, firefighters, air traffic controllers, and workers in other health professions.

Additional Information

General information about EMTs and paramedics is available from:

- National Association of Emergency Medical Technicians, 408 Monroe St., Clinton, MS 39056. Internet: <http://www.naemt.org>.
- National Registry of Emergency Medical Technicians, P.O. Box 29233, Columbus, OH 43229. Internet: <http://www.nremt.org>.
- National Highway Transportation Safety Administration, EMS Division, 400 7th St. SW, NTS-14, Washington, DC. Internet: <http://www.nhtsa.dot.gov/people/injury/ems/>.

Chapter 16



Imaging Modalities

Key Terms

Diagnostic imaging	Magnetic resonance imaging (MRI) technologist
Ultrasound machines	Radiation therapy
Magnetic resonance scanner/imaging (MRI)	Dosimetrist
Positron emission scanners/tomography (PET)	Sonographer/ultrasound technologist
Radiologist	Diagnostic medical sonography
Radiologic technician/radiographer/x-ray technician	American Registry of Radiologic Technologists (ARRT)
Fluoroscopy	American Registry of Diagnostic Medical Sonographers (ARDMS)
Contrast medium	Computerized tomography (CT)
CT technologist	Echocardiograph (EKG)

X Rays and Beyond

Perhaps the most familiar use of the x ray is for the diagnosis of broken bones. Although this remains a major use, medical uses of radiation go far beyond that. Today, radiation is used not only to produce images of the interior of the body, but also to treat disease well. The rapidly growing use of imaging techniques that do not involve x rays has transformed the field, and the term *diagnostic imaging* embraces procedures such as ultrasound and magnetic resonance scans as well as the familiar x ray.

With the application of computer technology to radiology, the field has been revolutionized. Computer-enhanced equipment produces amazingly clear and sharp images. Thanks in part to the speed with which computerized scanners can read and organize the millions of messages involved in a single test, it is now possible to view soft tissues and organs such as the heart and brain, parts of the body that until quite recently could be examined only through invasive techniques such as exploratory surgery.

Remarkable strides have occurred in the development of imaging equipment that does not involve the use of radiation, thereby reducing the risks of adverse side effects. Examples include *ultrasound machines* (which use sound waves), *magnetic resonance scan-*

ners (radio waves), and *positron emission scanners* (positrons). Although discovered many years ago, some of these imaging techniques became clinically practical only during the 1990s, as a result of improvements in electronic circuitry that enable computers to handle the vast amount of data involved.

Future generations of imaging equipment are certain to be even more sophisticated than machines in use today. Physicians seeking to confirm a diagnosis or monitor a patient's condition will obtain better information, and patients will be subjected to less risk or discomfort. There is ample reason to believe that technological advances in this field will continue to occur very rapidly, and that the clinical benefits will spur even more extensive use of diagnostic imaging procedures.

Radiologic Personnel

Work Description

There are no definitive job titles in this field. However, operators of radiologic equipment should not be confused with *radiologists*—physicians who specialize in the interpretation of radiographs. Radiologic personnel may be called *radiologic technologists* in one hospital, *radiographers* in another, and *x-ray technicians* in yet a third. The size of the facility, amount of specialization, and organizational policy are among the factors that determine which job titles are used. Another reason for inconsistency in job titles is the rapidity with which new medical technologies have emerged and practice patterns have changed. When new equipment is introduced, existing staff are taught to operate it, and it may be some time before job titles are changed.

Radiographers produce x-ray films (radiographs) of all parts of the human body for use in diagnosing medical problems. They prepare patients for radiologic examinations by explaining the procedure and ensuring that they remove any articles, such as belt buckles or jewelry, through which x rays cannot pass. Then they position the patients, who either lie on a table, sit, or stand, so that the correct parts of the body can be radiographed, always taking care not to aggravate injuries or make the patients uncomfortable. To prevent unnecessary radiation exposure, the technologist surrounds the exposed area with radiation protection devices such as lead shields or limits the size of the x-ray beam in some other way.

After the necessary preparations, the technologist positions the radiation equipment at the correct angle and height over the appropriate area of a patient's body. Using instruments similar to a measuring tape, the technologist measures the thickness of the section to be radiographed and then sets the controls on the machine to produce radiographs of the appropriate density, detail, and contrast. The technologist then places a properly identified x-ray film of the correct size under the part of the patient's body to be examined, and makes the exposure. Afterward, the technologist removes the film, identifies it, and develops it. Throughout the procedure, the technologist is careful to use only as much radiation as is necessary to obtain a good diagnostic examination.

Experienced radiographers may perform more complex imaging tests. For *fluoroscopies*, radiographers prepare a solution of *contrast medium* for the patient to drink, allowing the radiologist (a physician who interprets radiographs) to see soft tissues in the body. Some radiographers, called *CT technologists*, operate computerized tomography scanners to produce cross-sectional views of patients. Others operate machines using giant magnets and radio waves rather than radiation to create an image and are called *magnetic resonance imaging (MRI) technologists*.

With the successful use of radiation as a cancer treatment, *radiation therapy* technology has developed into a separate specialty. Radiation therapy technologists prepare cancer patients for treatment and administer prescribed doses of ionizing radiation to specific body parts. Technologists operate many kinds of equipment, including various high-energy linear accelerators with electron capabilities. They must position patients under the equipment with absolute accuracy so as to expose affected body parts to treatment while protecting the rest of the body from radiation.

Radiation therapy may produce side effects such as nausea and vomiting. Hair loss and redness of skin can also occur in treated areas, so the technologist must observe the patient's reactions and keep the physician informed. A sympathetic and understanding manner is essential because technologists need to give clear instructions and explanations to patients who are likely to be very ill and may be dying. Radiation therapy technologists have the opportunity to develop a close and compassionate relationship with patients and their families because, in contrast to other areas in radiology, these technologists are likely to see the same patient repeatedly.

Other responsibilities include quality assurance duties such as maintaining the proper operation of accessory devices and radiation equipment, observing departmental safety measures, keeping patients' records, and assisting in the preparation and handling of radioactive materials.

With additional education, available at major cancer centers, radiation therapy technologists can specialize and become medical radiation *dosimetrists*. In this specialty, the dosimetrist works with health physicists and oncologists (physicians who specialize in the study and treatment of tumors) to develop optimal treatment plans.

Many of the new, extremely powerful forms of diagnostic imaging do not involve the use of radiologic equipment at all. The ability to "see" inside the human body without exposing patients (or technologists) to radiation hazards is one reason the new procedures have taken hold so quickly.

Sonographers, also known as *ultrasound technologists*, use non-ionizing equipment to transmit sound waves at high frequencies into the patient's body, then collect reflected echoes to form an image. The image, which results from the "bounce-back" of sound from the areas being scanned, is viewed on a screen and may be automatically recorded on videotape or photographed for permanent records and for use in interpretation and diagnosis by physicians.

Sonographers select equipment appropriate for use in ultrasound tests ordered by physicians. They also check the patient's other diagnostic studies for information. Sonographers explain the procedure, record any additional medical history considered necessary, then position the patient for testing. Viewing the screen as the scan takes place, the sonographer must be able to recognize subtle differences between healthy and pathological areas; check for factors such as position, obstruction, or change of shape; and judge whether the images are satisfactory for diagnostic purposes. A high degree of technical skill and knowledge of anatomy and physiology are essential to recognize the significance of all body structures present in the ultrasound image. Sonographers may specialize in neurosonography (the brain), vascular (blood vessels) sonography, echocardiography (the heart), abdominal (the liver, kidneys, spleen, and pancreas) sonography, obstetrics and gynecology, and ophthalmology (the eye).

Magnetic resonance imaging (MRI) functions by aligning the magnetic domains of the body's atoms, disrupting these magnetic

alignments with radio waves, and then detecting the radio waves emitted as the atoms attempt to stabilize themselves.¹

Radiologic technologists must precisely follow doctors' orders. Before a radiologic technologist can perform any examination or procedure on a patient, a physician must issue a requisition for the study or treatment. Similar to prescriptions for drugs, these requisitions ensure that technologists examine or treat only people certified by physicians as needing such studies or treatment. At all times, technologists must follow precisely not only physicians' instructions but also regulations concerning use of radiation to ensure that they, patients, and coworkers are protected from its dangers.

Because radiologic technologists may work with patients who cannot help themselves, good health, moderate strength, and stamina are important. The possibility always exists that patients will have breathing difficulties or go into shock or cardiac arrest; should this happen, the technologist must be ready to assist until other medical personnel can be called in.

In addition to the duties involved in preparing patients and operating equipment, technologists may have administrative tasks. They may prepare work schedules, evaluate equipment, and, in general, manage their department or unit.

Work Environment

Radiologic technologists generally work a 40-hour week that may include evening and weekend or on-call hours. Some hospitals offer extremely flexible work schedules. A technologist may choose to work 13-hour days, for example. Part-time work is widely available. Technologists are on their feet a lot and may be required to lift or turn disabled patients. They work at diagnostic machines but may also do some procedures at patients' bedsides. Some radiologic technologists travel to patients in large vans equipped with sophisticated diagnostic equipment.

There are radiation hazards in this field, although they are minimized by the use of safety devices such as instruments that

¹ Rick Carlton, Director of Radiography, Lima Technical College, Lima, Ohio.

measure radiation exposures, lead aprons, gloves, and other shielding. Because of the presence of radiation and radioactive materials, technologists wear special badges that measure radiation in an area, as well as the cumulative lifetime dose. The badge measurement rarely approaches or exceeds established safety levels because of safety programs and built-in safety devices. Radiation therapy technologists are prone to emotional “burnout” because they treat extremely ill and dying patients on a daily basis.

Employment Opportunities

Most recently, radiologic technologists held about 167,000 jobs. Most technologists were radiographers, while the rest worked as sonographers. About one radiologic technologist in five worked part-time. More than half of all jobs for technologists are in hospitals. Most of the rest are in physicians’ offices and clinics, including diagnostic imaging centers.

Educational and Legal Requirements

Preparation for this field is offered at the postsecondary level in hospitals, medical centers, colleges and universities, trade schools, vocational-technical institutes, and the armed forces. Hospitals, which employ most radiologic technologists, prefer to hire individuals who have completed a formal training program. Formal training programs are offered in radiography, radiation therapy technology, and *diagnostic medical sonography* (ultrasound). These programs vary in a number of respects: length of training, prerequisites, class size, and cost. Programs range in length from one to four years and lead to a certificate, associate’s degree, or bachelor’s degree. Two-year programs are most prevalent.

Some one-year certificate programs are designed for individuals from other health professions who wish to change fields—medical technologists, registered nurses, and respiratory therapists, for example. Certificate programs also attract experienced radiologic technologists who want to specialize in radiation therapy technology or ultrasound technology. A bachelor’s or master’s degree in one of the radiologic technologies is desirable for supervisory, administrative, or teaching positions.

The Joint Review Committee on Education in Radiologic Technology accredits most formal training programs for this field. They accredited 602 radiography programs in 1999. The Joint Review Committee on Education in Diagnostic Medical Sonography accredited 77 programs in sonography in 1998.

Radiography programs require, at a minimum, a high school diploma or the equivalent. High school courses in mathematics, physics, chemistry, and biology are helpful. The programs provide both classroom and clinical instruction in anatomy, physiology, patient care procedures, physics, radiation protection, principles of imaging, medical terminology, positioning, medical ethics, radiobiology, and pathology.

It is difficult to generalize about prerequisites for training programs in radiation therapy and diagnostic medical sonography, but applicants with a background in science or experience in one of the health professions are generally preferred. Some programs consider applications from persons with liberal arts backgrounds; however, high school graduates with a strong math/science background are eligible.

Radiologic technologists and radiation therapy technologists are covered by provisions of the Consumer Patient Radiation Health and Safety Act of 1981, which aims to protect the public from the hazards of unnecessary exposure to medical and dental radiation by ensuring operators of radiologic equipment are properly trained. The federal government sets voluntary standards that the states, in turn, may use for accrediting training programs and certifying individuals who engage in medical or dental radiography. Because ultrasound does not use ionizing radiation, sonographers are excluded from this act.

In 1999, 35 states and Puerto Rico licensed radiologic technologists. No state requires sonographers to be licensed.

Registration is offered by the *American Registry of Radiologic Technologists (ARRT)* in radiography. The *American Registry of Diagnostic Medical Sonographers (ARDMS)* certifies the competence of sonographers. To be eligible for registration, technologists must graduate from an accredited school and pass an examination. Many employers prefer to hire registered radiographers and sonographers.

With experience and additional training, staff technologists in large radiography departments may become specialists, performing special procedures including *computerized tomography (CT)* scan-

ning, ultrasound, angiography, and magnetic resonance imaging (MRI). Another route to career advancement is supervisory; experienced technologists may be promoted to supervisory positions such as quality assurance technologist, chief technologist, and, ultimately, department administrator or manager. Some technologists progress by becoming instructors or directors in radiologic technology programs; others take jobs as sales representatives or instructors with equipment manufacturers.

With additional education, available at major cancer centers, radiation therapy technologists can specialize and become medical radiation dosimetrists. Dosimetrists work with health physicists and oncologists to develop treatment plans.

Radiographers and radiation therapists are required to fulfill 24 hours of continuing education every other year and provide documentation to prove that they are complying with these requirements. Sonographers must complete 30 hours of continuing education every three years.

Employment Trends

Employment of radiologic technologists is expected to grow as fast as the average for all occupations through 2008, as the population grows and ages, thereby increasing the demand for diagnostic imaging and therapeutic technology. Although physicians are enthusiastic about the clinical benefits of new technologies, the extent to which they are adopted will depend largely on cost and reimbursement considerations. Some promising new technologies may not come into widespread use because they are too expensive and third-party payers may not be willing to pay for their use.

Sonographers should find somewhat better job opportunities than do radiographers. Ultrasound is becoming an increasingly attractive alternative to radiologic procedures. Ultrasound technology is expected to continue to evolve rapidly and spawn many new procedures. Furthermore, because ultrasound does not use radiation for imaging, few side effects are likely from this technology.

Radiologic technologists who are educated and credentialed in more than one type of imaging technology, such as radiography and ultrasonography or nuclear medicine, will have better employment opportunities as employers look for new ways to control costs. In hospitals, multiskilled employees will be the most sought

after, as hospitals respond to cost pressures by continuing to merge departments.

Hospitals will remain the principal employer of radiologic technologists. However, employment is expected to grow most rapidly in offices and clinics of physicians, including diagnostic imaging centers. Health facilities such as these are expected to grow very rapidly through 2008 due to the strong shift toward outpatient care, encouraged by third-party payers and made possible by technological advances that permit more procedures to be performed outside the hospital. Some job openings will also arise from the need to replace technologists who leave the field.

The dominance of the hospital sector means that prospects for radiologic technologists will be better in some localities than in others, depending on conditions in the hospital industry. In communities that experience hospital closing or mergers, for example, the number of openings for trained radiographers could decline precipitously. In addition, hospitals are expected to make greater use of staff "cross-trained" to perform more than one job. This could reduce the number of openings for radiographers in an already well-supplied market. At the same time, hospitals in rural communities are likely to continue to have trouble recruiting and retaining qualified radiographers, especially in specialty areas such as radiation therapy and ultrasound.

Technologists are even working on the road. In response to rural needs, some radiologic technologists travel in large vans equipped with sophisticated diagnostic equipment. This trend is likely to continue.

In addition, opportunities in radiography will vary by specialty. For example, prospects for radiation therapy technologists should continue to be excellent, although it is important to bear in mind that this specialty is very small. Currently, radiation therapy technologists are in great demand, and reports of a shortage are widespread. Trends in the incidence of cancer and other malignancies will continue to be the principal factor affecting demand for these workers. Not only has there been an increase in the number of cancer cases detected, but more cases are being treated by radiation—either alone or in combination with surgery or chemotherapy.

Applications of diagnostic ultrasound are expected to grow very rapidly, in cardiology and obstetrics and gynecology in partic-

ular. In the area of cardiology, the *echocardiograph* (EKG) will continue to play a major role in the diagnosis of heart disease. Using this ultrasound test, doctors can see the size of the heart's walls and the actual motion of the heart. By observing the heart's motion, doctors can determine where and what type of functional problems the heart is experiencing.

In the area of obstetrics and gynecology, ultrasound will continue to be the only safe way to test fetal progress. In addition, new methods for diagnosing and treating infertility depend heavily on ultrasound. Before an ovum (egg) can be taken from a woman, it must be ripe. Using ultrasound, doctors can determine the optimal time for extracting the egg and fertilizing it.

More widespread use of ultrasound tests will spur demand for diagnostic medical sonographers. They are likely to find jobs in a wide range of health care settings, including offices of physicians, clinics, diagnostic imaging centers, HMOs, and hospitals.

There are reports of a shortage of technologists, especially radiation therapy technologists. However, efforts by employers to fill vacancies—raising salaries and improving working conditions—could attract more people to radiology and eventually promote a balance between job seekers and openings.

Earnings

Median annual earnings of radiologic technologists and technicians were \$36,000 in recent years. The middle 50 percent earned between \$30,220 and \$43,380 per year. The lowest 10 percent earned less than \$25,310, and the highest 10 percent earned more than \$52,050 per year. Median annual earnings in the industries employing the largest number of radiologic technologists and technicians were:

Medical and dental laboratories	\$39,400
Hospitals	36,280
Offices and clinics of medical doctors	34,870

Related Occupations

Radiologic technologists operate sophisticated equipment to help physicians, dentists, and other health practitioners diagnose and treat patients. Workers in related occupations include nuclear medicine technologists, cardiology technologists, cardiopulmonary technologists, electrocardiograph technicians, electroencephalographic technologists, radiation therapists, respiratory therapists, clinical laboratory technologists, and electroneurodiagnostic technologists.

Additional Information

For career information, enclose a stamped, self-addressed business size envelope with your request to:

- American Society of Radiologic Technologists, 15000 Central Ave. S.E., Albuquerque, NM 87123-3917.
- Society of Diagnostic Medical Sonographers, 12770 Coit Rd., Suite 708, Dallas, TX 75251.
- American Healthcare Radiology Administrators, 111 Boston Post Rd., Suite 105, P.O. Box 334, Sudbury, MA 01776.

For a current list of accredited education programs in radiography, write to:

- Joint Review Committee on Education in Radiologic Technology, 20 N. Wacker Dr., Suite 600, Chicago, IL 60606-2901.

For a current list of accredited education programs in diagnostic medical sonography, write to:

- Joint Review Committee on Education in Diagnostic Medical Sonography, 7108 S. Alton Way, Building C, Englewood, CO 80112. Internet: <http://www.caahep.org>.

Chapter 17



Social Workers

Key Terms

Environmental factors	School social worker
Psychological treatment	Criminal justice social worker
Emotional stress	Occupational social worker
Health care social worker	Gerontology social worker
Clinical social worker	Social work administrator
Child welfare/family services social worker	Social work planners and policy makers
Child or adult protective services social worker	Human service workers and assistants
Mental health social worker	

Health has been defined as not merely the absence of disease but as a condition of complete physical, mental, and social well-being. The effect of social, economic, and *environmental factors* on an individual's state of health is an accepted fact, and studies reveal a definite relationship between these factors and occurrence of disease. Recognizing this, health officials are placing increasing emphasis on the *psychological treatment* as well as the clinical treatment of patients in health facilities. Very often a patient's restoration to and maintenance of health is influenced by many factors that can be dealt with by other professionals, including competently trained social workers.

Social work in the health field involves programs and services that meet the special needs of the ill, disabled, elderly, or otherwise handicapped. Social workers deal with the total emotional, social, cultural, and physical needs of patients in whom the effects of illness go far beyond bodily discomfort. Such problems usually lie in three areas—problems within the patient, problems between the patient and family, or problems between the patient and the patient's environment. Illness invariably results in *emotional stress* and often causes significant changes in the lives of patients and their families. Medical care alone, even if it is of the highest quality, is often not sufficient. Social workers help patients and members of the health team to deal with these problems by providing a skilled appraisal of the source and significance of social, emotional, environmental, and economic factors affecting health. Their

efforts with individual patients or groups of patients help to bring about constructive and meaningful changes in terms of total health.

Social Workers

Work Description

Social work is a profession for those with a strong desire to help people, to make things better, and to make a difference. Social workers help people function the best way they can in their environment, deal with their relationships with others, and solve personal and family problems.

The following subsections discuss social work and its various areas of specialization in health-related activities.

Social workers often see clients who face life-threatening diseases or social problems. These problems may include inadequate housing, unemployment, lack of job skills, financial distress, serious illness or disability, substance abuse, unwanted pregnancy, or anti-social behavior. Social workers also assist families that have serious domestic conflicts, including those involving child or spousal abuse.

Through direct counseling, social workers help clients identify their concerns, consider effective solutions, and find reliable resources. They typically consult and counsel clients and arrange for service that can help them. Often, they refer clients to specialists in services such as debt counseling, child care or elder care, public assistance, or alcohol or drug rehabilitation. Social workers then follow through with the clients to ensure that services are helpful and that clients make proper use of the services offered. They may review eligibility requirements, help fill out forms and applications, visit clients on a regular basis, and provide support during crises.

Social workers practice their skills in a variety of settings. In hospitals and psychiatric hospitals, they provide or arrange for a wide range of support services. In mental health and community centers, social workers provide counseling services on marriage, family, and adoption matters, and they help people work through personal or community emergencies, such as dealing with loss or grief or arranging for disaster assistance. In schools, they help children, parents, and teachers cope with a variety of problems. In

social service agencies, they help people locate basic benefits, such as income assistance, housing, and job training. Social workers also offer counseling to those receiving therapy for addictive or physical disorders in rehabilitation facilities as well as to people in nursing homes in need of routine living care. In employment settings, they counsel people with personal, family, professional, or financial problems affecting their work performance. Social workers who work in courts and correction facilities evaluate and counsel individuals in the criminal justice system with the goal of helping clients cope better in society. In private practice, they provide clinical or diagnostic testing services covering a wide range of personal disorders.

Many social workers provide social services in health-related settings that now are governed by managed care organizations. To contain costs, these organizations are emphasizing short-term intervention, ambulatory and community-based care, and greater decentralization of services.

Most social workers specialize in an area of practice. Although some conduct research or are involved in planning or policy development, most prefer an area of practice in which they interact with clients.

Health care social workers help patients and their families cope with chronic, acute, or terminal illnesses and handle problems that may stand in the way of recovery or rehabilitation. They may organize support groups for families of patients suffering from cancer, AIDS, Alzheimer's disease, or other illnesses. They also advise family care givers, counsel patients, and help plan for their needs after discharge by arranging for at-home services—from meals-on-wheels to oxygen equipment. Some work on interdisciplinary teams that evaluate certain kinds of patients—geriatric or organ transplant patients, for example.

Clinical social workers offer psychotherapy or counseling and a range of diagnostic services in public agencies, clinics, and private practice.

Child welfare or family services social workers may counsel children and youths who have difficulty adjusting socially, advise parents on how to care for disabled children, or arrange for homemaker services during a parent's illness. If children have serious problems in school, child welfare workers may consult with parents, teachers, and counselors to identify the underlying causes and develop plans for treatment. Some social workers assist single

parents, arrange adoptions, and help find foster homes for neglected, abandoned, or abused children. Other child welfare workers work in residential institutions for children and adolescents.

Child or adult protective services social workers investigate reports of abuse and neglect and intervene if necessary. They may initiate legal action to remove children from homes and place them temporarily in an emergency shelter or with a foster family.

Mental health social workers provide services for persons with mental or emotional problems. Such services include individual and group therapy, outreach, crisis intervention, social rehabilitation, and training in skills of everyday living. These personnel may also help plan for supportive services to ease patients' return to the community. (Counselors and psychologists, who may provide similar services, are discussed elsewhere.)

School social workers diagnose students' problems and arrange for them to receive needed services, counsel children in trouble, and help integrate disabled students into the general school population. School social workers deal with problems such as student pregnancy, misbehavior in class, and excessive absences. They also advise teachers on how to cope with problem students.

Criminal justice social workers make recommendations to courts, prepare presentencing assessments, and provide services to prison inmates and their families. Probation and parole officers provide similar services to individuals sentenced by a court to parole or probation.

Occupational social workers usually work in a company's personnel department or health unit. Through employee assistance programs, they help workers cope with job-related pressures or personal problems that affect the quality of their work. Such social workers often offer direct counseling to employees whose performance is hindered by emotional or family problems or substance abuse. They also develop education programs and refer workers to specialized community programs.

Gerontology social workers specialize in services to the aged. They run support groups for family care givers or for the adult children of aging parents. In addition, they advise elderly people or family members about the choices in such areas as housing, transportation, and long-term care; they also coordinate and monitor services.

Social work administrators perform overall management tasks in a hospital, clinic, or other setting that offers social worker services.

Social work planners and *policy makers* develop programs to address such issues as child abuse, homelessness, substance abuse, poverty, and violence. These workers research and analyze policies, programs, and regulations. They identify social problems and suggest legislative and other solutions. In addition, they may help raise funds or write grants to support the recommended programs.

Work Environment

Full-time social workers usually work a standard 40-hour week. Some occasionally work evenings and weekends so as to meet with clients, attend community meetings, and handle emergencies. Some, particularly in voluntary nonprofit agencies, work part-time. Most social workers work in pleasant, clean offices that are well lit and well ventilated. They spend most of their time in an office or residential facility, but may travel locally to visit clients, to meet with service providers, or to attend meetings. Some may use one of several offices within a local area as a site for meeting.

The work, while satisfying, can be emotionally draining. Understaffing and large caseloads add to the pressure in some agencies.

Employment Opportunities

Most recently, social workers held about 468,000 jobs. About 1 out of 3 jobs were in state, county, or municipal government agencies, primarily in departments of health and human services, mental health, social services, child welfare, housing, education, and corrections. Most private-sector jobs were in social service agencies, hospitals, nursing homes, home health agencies, and other health centers or clinics.

Although most social workers are employed in cities or suburbs, some work in rural areas.

Educational and Legal Requirements

A bachelor's degree in social work (BSW) is the most common minimum requirement to qualify for a job as a social worker. Note, however, that majors in psychology, sociology, and related fields

may be sufficient to qualify for some entry-level jobs, especially in small community agencies. Although a bachelor's degree is required for entry into the field, an advanced degree has become the standard for many positions. A master's degree in social work (MSW) is necessary for positions in health and mental health settings and typically is required for certification for clinical work. Jobs in public agencies also may require an advanced degree, such as a master's degree in social service policy or administration. Supervisory, administrative, and staff training positions usually require at least an advanced degree. College and university teaching positions and most research appointments normally require a doctorate in social work (DSW or Ph.D.).

As of 1999, the Council on Social Work Education had accredited more than 400 BSW programs and more than 125 MSW programs. The Group for Advancement of Doctoral Education in Social Work listed 71 doctoral programs for Ph.D.'s in social work or DSWs (Doctor of Social Work).

BSW programs prepare graduates for direct service positions such as case worker or group worker. They include courses in social work practice, social welfare policies, human behavior and the social environment, social research methods, social work values and ethics, dealing with a culturally diverse clientele, promotion of social and economic justice, and at-risk populations. Accredited BSW programs require at least 400 hours of supervised field experience.

Master's degree programs prepare graduates for work in their chosen field of concentration and continue to develop the skills needed to perform clinical assessments, manage large caseloads, and explore new ways of drawing upon social services to meet the needs of clients. Master's programs last two years and include 900 hours of supervised field instruction or an internship. A part-time program may take four years to complete. Entry into a master's program does not require a bachelor's degree in social work, but courses in psychology, biology, sociology, economics, political science, history, social anthropology, urban studies, and social work are recommended. In addition, a second language can be very helpful. Most master's programs offer advanced standing for those with a bachelor's degree from an accredited social work program.

All states and the District of Columbia have licensing, certification, or registration requirements regarding social work practice and the use of professional titles. Although standards for licensing vary from state to state, a growing number of states are placing

greater emphasis on communications skills, professional ethics, and sensitivity for cultural diversity issues. Additionally, the National Association of Social Workers (NASW) offers voluntary credentials. The Academy of Certified Social Workers (ACSW) credential is granted to all social workers who have met established eligibility criteria. Social workers practicing in school settings may qualify for the School Social Work Specialist (SSWS) credential. Clinical social workers may earn either the Qualified Clinical Social Worker (QCSW) or the advanced credential—Diplomate in Clinical Social Work (DCSW). Social workers holding clinical credentials also may list themselves in the biannual publication of the *NASW Register of Clinical Social Workers*. Credentials are particularly important for those in private practice; some health insurance providers require them for reimbursement.

Social workers should be emotionally mature, objective, and sensitive to people and their problems. They must be able to handle responsibility, work independently, and maintain good working relationships with both clients and coworkers. Volunteer or paid jobs as a social work aide offer ways of testing one's interest in this field.

Advancement to supervisor, program manager, assistant director, or executive director of a social service agency or department is possible, but usually requires an advanced degree and related work experience. Other career options for social workers include teaching, research, and consulting. Some also help formulate government policies by analyzing and advocating policy positions in government agencies, in research institutions, and on legislators' staffs.

Some social workers go into private practice. Most private practitioners are clinical social workers who provide psychotherapy, which is usually reimbursed through health insurance. Private practitioners typically have at least a master's degree and a period of supervised work experience. A network of contacts for referrals also is essential to maintain such a practice.

Employment Trends

Employment of social workers is expected to increase much faster than the average for all occupations through 2008. The elderly population is increasing rapidly, creating greater demand for health and other social services. Social workers also will be needed

to help the sizable baby boom generation deal with depression and mental health concerns stemming from midlife, career, or other personal and professional difficulties. In addition, continuing concern about crime, juvenile delinquency, and services for the mentally ill, the mentally retarded, AIDS patients, and individuals and families in crisis will spur demand for social workers in several areas of specialization. Many job openings will also be created by social workers who leave the occupation and must be replaced.

Opportunities for social workers in hospitals and in many larger, long-term care facilities will increase in response to the need to ensure that the necessary medical and social services are in place when individuals leave the facility. However, this service need will be shared across several occupations. In an effort to control costs, these facilities increasingly emphasize discharging patients early, applying an interdisciplinary approach to patient care, and employing a broader mix of personnel—including clinical specialists, registered nurses, and health aides—to handle patient care or client need.

Social worker employment in home health care services is growing, in part because hospitals are releasing patients earlier than in the past. However, the expanding senior population, as noted earlier, is an even more critical factor. Social workers with backgrounds in gerontology are finding work in the growing numbers of assisted living and senior living communities.

Employment of social workers in private social service agencies will grow, but not as rapidly as demand for their services. Agencies increasingly will restructure services and hire more lower-paid human service workers and assistants instead of social workers. Employment in state and local government may grow somewhat in response to increasing needs for public welfare and family services; however, many of these services will be contracted out to private agencies. Additionally, employment levels may fluctuate depending on need and government funding for various social service programs.

Employment of school social workers is expected to grow, due to broader efforts to respond to rising rates of teen pregnancy and to the adjustment problems of immigrants and children from single-parent families. Moreover, continued emphasis on integrating disabled children into the general school population will lead to more jobs for such workers. Ultimately, the availability of state and local funding will dictate the actual job growth in schools.

Opportunities for social workers in private practice will expand because of the anticipated availability of funding from health insurance and public-sector contracts. Also, with increasing affluence, people will be better able to pay for professional help to deal with their personal problems. The growing popularity of employee assistance programs also is expected to spur demand for private practitioners, some of whom will provide social work services to corporations on a contractual basis.

Competition for social worker jobs is stronger in cities where demand for their services tends to be highest, training programs for social workers are prevalent, and interest in available positions is strongest. However, opportunities should be good in rural areas, which often find it difficult to attract and retain qualified staff.

Earnings

According to the most recent data, median annual earnings of social workers were \$31,470. The middle 50 percent earned between \$24,910 and \$40,170 per year. The lowest 10 percent earned less than \$20,120, and the top 10 percent earned more than \$50,280. Median annual earnings in the industries employing the largest numbers of child, family, and school social workers in 2000 were:

Local government, except education and hospitals	\$33,950
Hospitals	33,150
Health and allied services, not elsewhere classified	28,270
Individual and family services	28,160
Residential care	26,620

Related Occupations

Through direct counseling or referral to other services, social workers help people solve a range of personal problems. Workers in occupations with similar duties include the clergy, mental health

counselors, counseling psychologists, and human service workers and assistants.

Additional Information

For information about career opportunities in social work, contact:

- National Association of Social Workers, Career Information, 750 First St. NE., Suite 700, Washington, DC 20002-4241.

An annual *Directory of Accredited BSW and MSW Programs* is available for a nominal charge from:

- Council on Social Work Education, 1725 Duke Street, Suite 500, Alexandria, VA 22314. Internet: <http://www.cswe.org>.

Information on licensing requirements and testing procedures for each state may be obtained from state licensing authorities or from:

- Association of Social Work Boards, 400 South Ridge Parkway, Suite B, Culpeper, VA 22701. Internet: <http://www.aswb.org>.

Human Service Workers and Assistants

Work Description

Human service workers and assistants is a generic term for people with various job titles, including social service assistant, case management aide, social work assistant, community support worker, alcohol or drug abuse counselor, mental health aide, community outreach worker, life skills counselor, and gerontology aide. These individuals usually work under the direction of professionals in a variety of fields such as nursing, psychiatry, psychology, rehabilitative or physical therapy, or social work. The amount of responsibility and supervision they are given varies a great deal. Some have little direct supervision; others work under close direction.

Human service workers and assistants provide both direct and indirect client services. They assess clients' needs, establish their eligibility for benefits and services, and help clients obtain the needed resources. They examine financial documents such as rent receipts and tax returns to determine whether clients are eligible for food stamps, Medicaid, welfare, and other human service programs. They also arrange for transportation and escorts, if necessary, and provide emotional support. Human service workers and assistants monitor and keep case records on clients and report progress to supervisors and case managers. They also may transport or accompany clients to group meal sites, adult day care centers, or doctors' offices. They may telephone or visit clients' homes to make sure services are being received, or to help resolve disagreements, such as those between tenants and landlords. They also may help clients complete insurance forms, medical forms, or applications for financial assistance. Additionally, social and human service workers and assistants may assist others with their daily living needs.

These types of social workers play a variety of roles in a community. They may organize and lead group activities, assist clients in need of counseling or crisis intervention, or administer a food bank or emergency fuel program. In halfway houses, group homes, and government-supported housing programs, they assist adults who need supervision with personal hygiene and daily living skills. They review clients' records, ensure that they take correct doses of medication, talk with family members, and confer with medical personnel and other care givers to gain better insight into clients' backgrounds and needs. Human service workers and assistants also provide emotional support and help clients become involved in their own well-being, in community recreation programs, and in other activities.

In psychiatric hospitals, rehabilitation programs, and outpatient clinics, human service workers and assistants work with professional care providers, such as psychiatrists, psychologists, and social workers to help clients master everyday living skills, to teach them how to communicate more effectively, and to get along better with others. They support the client's participation in a treatment plan, such as individual or group counseling or occupational therapy.

Work Environment

Working conditions of human service workers and assistants vary. Some work in offices, clinics, and hospitals; others work in group homes, shelters, sheltered workshops, and day programs. Many spend their time in the field visiting clients. Most work a 40-hour week, although some work in the evening and on weekends.

The work, while satisfying, can be emotionally draining. Understaffing and relatively low pay may add to the pressure. Turnover is reported to be high, especially among workers without academic preparation for this field.

Employment Opportunities

Most recently, human service workers and assistants held about 271,000 jobs. Almost half worked in private social or human services agencies, offering a variety of services, including adult day care, group meals, crisis intervention, counseling, and job training. Many human service workers and assistants supervised residents of group homes and halfway houses. About one-third were employed by state and local governments, primarily in public welfare agencies and facilities for mentally disabled and developmentally challenged individuals. Human service workers and assistants also held jobs in clinics, detoxification units, community mental health centers, psychiatric hospitals, day treatment programs, and sheltered workshops.

Educational and Legal Requirements

Although a bachelor's degree usually is not required for this occupation, employers increasingly are seeking individuals with relevant work experience or education beyond high school. Certificates or associate degrees in subjects such as social work, human services, or one of the social or behavioral sciences meet most employers' requirements.

The core curriculum of human services programs trains students to observe patients and record information, conduct patient

interviews, implement treatment plans, employ problem-solving techniques, handle crisis intervention matters, and use proper case management and referral procedures. General education courses in liberal arts, sciences, and the humanities are also part of this curriculum. Many degree programs require completion of a supervised internship as well.

The level of educational attainment often influences the kind of work to which an employee may be assigned and the degree of responsibility that may be entrusted to the person. For example, workers with no more than a high school education are likely to receive extensive on-the-job training to work in direct-care services, whereas employees with a college degree might be assigned to do supportive counseling, coordinate program activities, or manage a group home. Human service workers and assistants with proven leadership ability, either from previous experience or as a volunteer in the field, often enjoy greater autonomy in their work. Regardless of the academic or work background of employees, most employers provide some form of in-service training, such as seminars and workshops, to their employees.

Hiring requirements in group homes tend to be more stringent than those in other settings. For example, employers may require employees to have a valid driver's license or to submit to a criminal background investigation.

Employers try to select applicants who have effective communication skills, a strong sense of responsibility, and the ability to manage their time effectively. Many human services jobs involve direct contact with people who are vulnerable to exploitation or mistreatment; for this reason, patience, understanding, and a strong desire to help others are highly valued characteristics.

Formal education is almost always necessary for advancement in this field. In general, career advancement requires a bachelor's or master's degree in counseling, rehabilitation, social work, human services management, or a related field.

Employment Trends

Opportunities for human service workers and assistants are expected to be excellent, particularly for applicants with appropriate postsecondary education. The number of human service workers and assistants is projected to grow much faster than the average

for all occupations between 1998 and 2008—ranking among the most rapidly growing occupations. The need to replace workers who move into new positions due to advancement, retirement, or other reasons will create many new job opportunities. This occupation, however, is not attractive to everyone. It can be draining emotionally and the pay is relatively low. Qualified applicants should have little difficulty finding employment.

Faced with rapid growth in the demand for social and human services, employers are developing new strategies for delivering and funding services. Many are increasingly willing to allow human service workers and assistants to undertake greater responsibility in delivering services to clients.

Opportunities are expected to be best in job training programs, residential care facilities, and private social service agencies, which include such services as adult day care and meal delivery programs. Demand for these services will expand as the elderly population grows, as these individuals are more likely to need services. In addition, social and human service workers and assistants will continue to be needed to provide services to pregnant teenagers, the homeless, the mentally disabled and developmentally challenged, and those with substance abuse problems.

Job training programs are expected to require additional human service workers and assistants. As the focus of social welfare policies shifts from benefit-based programs to work-based initiatives, there will be an increased demand for people to teach job skills to people who are new to or reentering the workforce. Additionally, streamlined and downsized businesses will create increased demand for persons with job retraining expertise. Human service workers and assistants will help companies to cope with new modes of conducting business and employees to master new job skills.

Residential care establishments should face increased pressures to respond to the needs of the chronically and mentally ill. Many of these patients have been deinstitutionalized and lack the knowledge or the ability to care for themselves. Also, more community-based programs, supported independent living sites, and group residences are expected to be established to house and assist the homeless and the chronically and mentally ill. As a result, demand for human service workers and assistants will increase.

The number of jobs for human service workers and assistants will grow more rapidly than overall employment in state and local governments. State and local governments employ many of their

human service workers and assistants in corrections and public assistance departments. Although employment in corrections departments is growing, employment of social and human service workers and assistants is not expected to grow as rapidly as employment of other corrections personnel, such as guards or corrections officers. Public assistance programs have been employing more human service workers and assistants in an attempt to employ fewer social workers, who are more educated and, therefore, more highly paid.

Earnings

Most recently, median annual earnings of human service workers and assistants were \$22,330. The middle 50 percent earned between \$17,820 and \$27,930 per year. The top 10 percent earned more than \$35,220, while the lowest 10 percent earned less than \$14,660.

Median annual earnings in the industries employing the largest numbers of human service workers and assistants in 1997 were as follows:

State government, except education and hospitals	\$27,130
Local government, except education and hospitals	25,320
Social services, not elsewhere classified	21,820
Individual and family services	21,350
Residential care	19,880

Related Occupations

Workers in other occupations that require skills similar to those of human service workers and assistants include social workers, religious workers, residential counselors, child care workers, occupational therapy assistants, physical therapy assistants, psychiatric aides, and activity leaders.

Additional Information

Information on academic programs in human services may be found in most directories of two- and four-year colleges. Such directories are available at libraries or career counseling centers.

For information on programs and careers in human services, contact:

- National Organization for Human Service Education, Brookdale Community College, Lincroft, NJ 07738.
- Council for Standards in Human Services Education, Northern Essex Community College, Haverhill, MA 01830.

Information on job openings may be obtained from state employment service offices or directly from city, county, or state departments of health, mental health and mental retardation, and human resources.

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Chapter 18



Psychology

Key Terms

Clinical psychologist	Experimental psychologist
Health psychologist	Industrial psychologist
Neuropsychologist	Psychometric psychologist
Geropsychologist	Rehabilitation psychologist
Counseling psychologist	School psychologist
Developmental psychologist	Social psychologist
Educational psychologist	Psychiatric or mental health technician
Engineering psychologist	Psychiatric aide
Personnel psychologist	

Psychologists

Psychologists study the human mind and human behavior. Psychology focuses on all aspects of human behavior, both normal and abnormal. It involves a scientific approach to gathering, quantifying, analyzing, and interpreting data on why people act as they do, and it provides insight into varied forms of human behavior and related mental and physical processes. Through the application of highly developed skills and knowledge, psychologists seek to identify, prevent, and solve the varied problems of human behavior.

As a health career, psychology is one of the allied professions devoted to mental health. Along with psychiatry, psychiatric nursing, and psychiatric social work, psychology contributes both to the prevention of mental illness and to its diagnosis and treatment. As distinguished from psychiatry, which is a branch of medicine, psychology is a nonmedical science. As distinguished from psychiatric social work, psychology looks first at the individual's reaction to his or her circumstances—family, job, and social relationships. The psychiatric social worker looks first at the individual's surrounding circumstances and relationships.

Work Description

Psychologists study the behavior of individuals or groups to ascertain and understand the fundamental processes of human behavior. Some psychologists interview people and develop, administer, and score a variety of psychological tests. Others provide counseling and therapy to persons suffering emotional or adjustment problems in mental health and rehabilitation centers, hospitals, and private practice. Since psychology is basically a science, the psychologist is often the most knowledgeable member of the mental health team concerning research. The science of psychology is one of the main sources of our increasing understanding of mental capacity and intelligence and of the effect of emotions on health. Psychological research is contributing continuously to the improvement of diagnostic methods and to the treatment and prevention of mental and emotional disorders. Psychologists also work with disabled persons, either individually or in groups, to diagnose behavioral problems and to help correct or compensate for these impairments.

Designing, developing, and evaluating materials and procedures to resolve problems in educational and training programs may also be a part of a psychologist's work. In addition, psychologists employ scientific techniques to deal with the problems of motivation and morale in the work setting. Psychologists design, conduct, and analyze the results of experiments to improve understanding of human and animal behavior.

Some psychologists engage in private practice; others work in colleges and universities, where they train graduate and undergraduate students and engage in basic research. Increasingly, they work as administrators of psychology programs in hospitals, clinics, and community health agencies. Many psychologists practice in federal, state, and local agencies, a variety of business and industrial organizations, and various branches of the armed forces.

The field of psychology offers a number of areas of specialization that an individual can consider when planning a career. These areas include clinical psychology, counseling psychology, developmental psychology, educational psychology, engineering psychology, personnel psychology, experimental psychology, industrial psychology, psychometric psychology, rehabilitation psychology, and school and social psychology.

Clinical psychologists specialize in the assessment and treatment of persons with mental and emotional problems and illnesses. They apply experience and scientific knowledge of human behavior to diagnose and treat psychological problems ranging from the developmental crises of adolescence to extreme psychotic conditions. Working in hospitals, clinics, or similar medical institutions, clinical psychologists design and conduct research either alone or in conjunction with physicians or other social scientists. Although the emphasis may differ considerably from one position to another, all clinical psychologists have in common the application of scientific knowledge of human behavior to the care and treatment of the handicapped and the disturbed. Their purpose is to help the individual who is maladjusted to learn new and better habits of behavior so as to find a more satisfactory way of living.

Clinical psychologists work directly with the patient, or client, to uncover everything that will help in understanding his or her difficulties. They also talk with the patient's family, friends, physicians, and teachers to round out this background. At times they consult with the psychiatrist, social worker, and others concerned with diagnosis and treatment.

Areas of specialization within clinical psychology include health psychology, neuropsychology, and geropsychology. *Health psychologists* promote good health through health maintenance counseling programs designed to help people achieve goals such as to stop smoking or lose weight. *Neuropsychologists* study the relationship between the brain and behavior. They often work in stroke and head injury programs. *Geropsychologists* deal with the special problems faced by the elderly. The emergence and growth of these specialties reflect the increasing participation of psychologists in providing direct services to special patient populations.

Counseling psychologists help normal or moderately maladjusted persons, either individually or in groups, to gain self-understanding, recognize their problems, and develop methods of coping with their difficulties. Counseling psychologists pay particular attention to the role of education and work in a person's behavior and to the interaction between individuals and the environments in which they live. The emphasis in this type of counseling is primarily on preventing or forestalling the onset of mental illness. Growing public awareness of mental health problems has highlighted the importance of and need for the services that these psychologists provide.

Developmental psychologists specialize in investigating the development of individuals from prenatal origins through old age. In studying the changes involved in mental, physical, emotional, and social growth, psychologists seek to determine the origins of human behavior and the reasons for human growth and decline. For example, psychologists study how an infant's behavior and feelings are related to biological growth of the body. Another example is the study of the influence of social learning and socialization on an infant's development into a socialized person.

Educational psychologists design, develop, and evaluate materials and procedures to resolve problems in educational and training programs. These psychologists analyze educational problems, develop instructional materials, determine the best conditions for instruction, and evaluate the effectiveness of educational programs. Educational psychologists are employed by school systems, the military, private research and development firms, and industrial concerns.

Engineering psychologists deal with the design and use of the systems and environments in which people live and work. Their main purpose is the development of efficient and acceptable interactions between individuals and the environments in which they function. These psychologists help to design equipment, work areas, and systems involving direct interaction of humans with machines. In addition, they develop the aids, training devices, and requirements necessary to train personnel to operate such systems successfully.

Personnel psychologists apply professional skills in the hiring, assignment, and promotion of employees to increase productivity and job satisfaction. These psychologists place great emphasis on data gathered from tests and interviews and apply the techniques of other areas of psychology such as the experimental, developmental, and psychometric specializations to normal work activities.

The *experimental psychologist* designs, conducts, and analyzes experiments to develop knowledge regarding human and animal behavior. *Experimental psychology* is a general term referring to the methods employed in studying behavioral processes. There are different types of experimental psychologists, who are identified by their areas of specialization, such as comparative psychologists, learning psychologists, and physiological psychologists.

Industrial psychologists use scientific techniques to deal with problems of motivation and morale in the work setting. These

psychologists study how work is organized and suggest improvements designed to increase work quality, productivity, and worker satisfaction. They consult with all levels of management and present recommendations for developing better training programs and preretirement counseling services.

Psychometric psychologists are directly involved with the measurement of human behavior, primarily through the use of tests. Typically well trained in mathematics, statistics, and the use of computers, they design, develop, and validate intelligence, aptitude, and personality tests; analyze complex statistical data; and design various types of research investigations. In addition, they conduct pilot studies of newly developed materials and devise and apply procedures for measuring the psychological variables affecting human behavior.

Rehabilitation psychologists work with disabled persons, either individually or in groups, to assess the degree of disability and develop ways to correct or compensate for these impairments. The primary concern of these psychologists is the restoration of the patient's emotional, physical, social, and economic effectiveness.

School psychologists are concerned with developing effective programs for improving the intellectual, social, and emotional development of children in an educational system or school. They diagnose the needs of gifted, handicapped, and disturbed children and plan and carry out corrective programs to enable them to do schoolwork at their highest potential and to adjust to everyday pressures. To determine a child's needs, limitations, and potential, school psychologists often observe the child in the classroom and at play, study school records, consult with teachers and parents, and administer and interpret various tests. They advise school administrators and parent-teacher groups in matters involving psychological services within the school system and serve as consultants in education for children who are handicapped, mentally disturbed, or mentally retarded. School psychologists also engage in planning and developing special programs in the area of adult education.

Social psychologists study the effects of groups and individuals on the thoughts, feelings, attitudes, and behavior of the individual. They study, for example, the ways in which social attitudes develop and how members of families, neighborhoods, and communities influence each other.

Work Environment

A psychologist's specialty and place of employment determine his or her working conditions. Clinical, school, and counseling psychologists in private practice have their own offices and set their own hours. They often offer evening and weekend hours to accommodate their clients. Psychologists employed in hospitals, nursing homes, and other health facilities may work shifts including evenings and weekends, whereas those who work in schools and clinics generally work regular hours.

Psychologists employed as faculty by colleges and universities divide their time between teaching and research and may also have administrative responsibilities. Many have part-time consulting practices. Most psychologists in government and industry have well-structured schedules.

Increasingly, many psychologists work as part of a team and consult with other psychologists and various health care professionals. Many experience pressures due to deadlines, tight schedules, and overtime work. Their routines may be interrupted frequently. Travel is required to attend conferences or conduct research.

Educational and Legal Requirements

A doctoral degree is usually required for employment as a licensed clinical or counseling psychologist. Psychologists with a Ph.D. qualify for a wide range of teaching, research, clinical, and counseling positions in universities, elementary and secondary schools, private industry, and government. Psychologists with a Doctor of Psychology (Psy.D.) degree usually work in clinical positions. An Educational Specialist (Ed.S.) degree will qualify an individual to work as a school psychologist. Persons with a master's degree in psychology may work as industrial-organizational psychologists. Others work as psychological assistants, under the supervision of doctoral-level psychologists, and conduct research or psychological evaluations.

A bachelor's degree in psychology qualifies a person to assist psychologists and other professionals in community mental health centers, vocational rehabilitation offices, and correctional programs. These individuals may work as research or administrative

assistants or become sales or management trainees in business. Some work as technicians in related fields such as marketing research. Without additional academic training, however, their opportunities in psychology are severely limited.

In the federal government, candidates having at least 24 semester hours in psychology and one course in statistics qualify for entry-level positions. Because this is one of the few areas in which one can work as a psychologist without possessing an advanced degree, competition for these jobs is keen.

Typically, clinical psychologists must have completed the Ph.D. or Psy.D. requirements and served an internship. Vocational and guidance counselors usually need two years of graduate study in counseling and one year of counseling experience. School psychology requires a master's degree followed by a one-year internship.

Most students need at least two years of full-time graduate study to earn a master's degree in psychology. Requirements usually include practical experience in an applied setting and completion of a master's thesis based on an original research project.

A doctoral degree usually requires five to seven years of graduate study. The Ph.D. degree culminates in a dissertation based on original research. Courses in quantitative research methods, which include the use of computer-based analysis, are an integral part of graduate study and are necessary to complete the dissertation. The Psy.D. may be based on practical work and examinations rather than a dissertation. In clinical or counseling psychology, the requirements for the doctoral degree usually include at least a one-year internship.

Competition for admission into graduate programs is keen. Some universities require an undergraduate major in psychology. Others prefer only coursework in basic psychology plus courses in the biological, physical, and social sciences, statistics, and mathematics.

The American Psychological Association (APA) presently accredits doctoral training programs in clinical, counseling, and school psychology. The National Council for Accreditation of Teacher Education, with the assistance of the National Association of School Psychologists, is also involved in the accreditation of advanced degree programs in school psychology. In addition, the APA accredits institutions that provide internships for doctoral students in school, clinical, and counseling psychology.

Psychologists in independent practice or those who offer any type of patient care, including clinical, counseling, and school psy-

chologists, must meet certification or licensing requirements in all states and the District of Columbia. Licensing laws vary by state and by type of position. Clinical and counseling psychologists usually require a doctorate in psychology, completion of an approved internship, and one to two years of professional experience. In addition, all states require that applicants pass an examination. Most state boards administer a standardized test, and many supplement that examination with additional oral or essay questions. Most states certify those applicants with a master's degree as school psychologists after completion of an internship. Some states require continuing education for license renewal.

Most states require that licensed or certified psychologists limit their practice to areas in which they have developed professional competence through training and experience.

The American Board of Professional Psychology (ABPP) recognizes professional achievement through certification programs, primarily in clinical psychology, clinical neuropsychology, counseling, forensic, industrial-organizational, and school psychology. Candidates for ABPP certification need a doctorate in psychology, five years of experience, professional endorsements, and a passing grade on an examination.

Aspiring psychologists who are interested in direct patient care must be emotionally stable, mature, and able to deal effectively with people. Sensitivity, compassion, and the ability to lead and inspire others are particularly important qualities for clinical work and counseling. Research psychologists should be able to do detailed work both independently and as part of a team. Excellent communication skills are necessary to succeed in research. Patience and perseverance are vital qualities, because results from psychological treatment of patients or from research usually take a long time to obtain.

Employment Opportunities

Most recently, psychologists held about 182,000 jobs. Educational institutions employed about 4 out of 10 salaried psychologists in positions other than teaching, such as counseling, testing, research, and administration. Three out of 10 were employed in health services, primarily in hospitals, mental health clinics, rehabilitation centers, nursing homes, and other health facilities.

Government agencies at the federal, state, and local levels employed about 17 percent of all psychologists. Governments employ psychologists in hospitals, clinics, correctional facilities, and other settings. In particular, the Department of Veterans Affairs and the Department of Defense employ a majority of the psychologists working for federal agencies. Some psychologists work in social service organizations, research organizations, management consulting firms, marketing research firms, and other businesses.

After several years of working in the public sector, some psychologists—usually those with doctoral degrees—enter private practice or set up private research or consulting firms. About one-half of all psychologists are self-employed.

In addition to the jobs described previously, many psychologists hold positions as psychology faculty at colleges and universities, and as high school psychology teachers.

Employment Trends

Employment of psychologists is expected to grow about as fast as the average for all occupations through 2008. Employment in health care will grow fastest in outpatient mental health and substance abuse treatment clinics. Numerous job opportunities will also arise in schools, public and private social service agencies, and management consulting services. Companies will use psychologists' expertise in survey design, analysis, and research to provide marketing evaluation and statistical analysis. The increase in employee assistance programs, which offer employees help with their personal problems, should also spur job growth in this field.

Opportunities for people holding doctorates from leading universities in areas with an applied emphasis, such as clinical, counseling, health, and educational psychology, should have particularly good prospects. Psychologists with extensive training in quantitative research methods and computer science may have a competitive edge over applicants without this background.

Graduates with a master's degree in psychology qualify for positions in school and industrial-organizational psychology. Graduates of master's degree programs in school psychology

should have the best job prospects, as schools are expected to increase student counseling and mental health services in the future. Master's degree holders with several years of industrial experience can obtain jobs in consulting and marketing research. Other master's degree holders may find jobs as psychological assistants in the community mental health field, which often requires direct supervision by a licensed psychologist. Still others may find jobs involving research and data collection and analysis in universities, government, or private companies.

Very few opportunities directly related to psychology will exist for bachelor's degree holders. Some may find jobs as assistants in rehabilitation centers or in other jobs involving data collection and analysis. Those who meet state certification requirements may become high school psychology teachers.

Earnings

According to the latest data, median annual earnings of salaried psychologists were \$48,596. The middle 50 percent earned between \$36,570 and \$70,870 per year. The lowest 10 percent earned less than \$27,960 and the highest 10 percent earned more than \$88,280 per year. Median annual earnings in the industries employing the largest number of psychologists were as follows:

Hospitals	\$52,460
Elementary and secondary schools	51,310
Offices of other health practitioners	50,990
Offices and clinics of medical doctors	47,890
Individual and family services	35,720

The federal government recognizes education and experience in certifying applicants for entry-level positions. The starting salary for psychologists having a bachelor's degree was about \$21,900 in 2001; those with superior academic records could begin at

\$27,200. Psychologists with a master's degree and one year of experience could start at \$33,300. Psychologists having a Ph.D. or Psy.D. degree and one year of internship could start at \$40,200, and some individuals with greater experience could start at \$48,200. Beginning salaries were slightly higher in selected areas of the country where the prevailing local pay level was higher. The average annual salary for psychologists in the federal government was \$72,830 in early 2001.

Related Occupations

Psychologists are trained to conduct research and teach, evaluate, counsel, and advise individuals and groups with special needs. Others who do this kind of work include marketing research analysts, advertising and public relations managers, clinical social workers, physicians, sociologists, clergy, special education teachers, and counselors.

Additional Information

For information on careers, educational requirements, financial assistance, and licensing in all fields of psychology, contact:

- American Psychological Association, Research Office and Education in Psychology and Accreditation Offices, 750 1st St. NE, Washington, DC 20002. Internet: <http://www.apa.org>.

For information on careers, educational requirements, certification, and licensing of school psychologists, contact:

- National Association of School Psychologists, 4030 East West Hwy., Suite 402, Bethesda, MD 20814. Internet: <http://www.naspweb.org>.

Information about state licensing requirements is available from:

- Association of State and Provincial Psychology Boards, P.O. Box 4389, Montgomery, AL 36103-4389. Internet: <http://www.asppb.org>.

Information on obtaining a job with the federal government may be obtained from the Office of Personnel Management

through a telephone-based system. Consult your telephone directory under U.S. Government for a local number or call (912) 757-3000 or (912) 744-2299 (TDD). Information also is available from the OPM Internet site: <http://www.usajobs.opm.gov>.

Psychiatric or Mental Health Technicians

A relatively recent development in the health field is the emergence of the position of *psychiatric* or *mental health technician*. As members of health teams, these technicians work in a wide range of mental health delivery programs providing care and treatment of emotionally or mentally disabled persons. They work as assistants to professional specialists on the health team, such as psychologists, nurses, and social workers, and carry out responsibilities under the direction and supervision of a professional team leader. Although they are not independent practitioners, psychiatric/mental health technicians play a key role in the health services field.

Work Description

Psychiatric/mental health technicians provide professional care and treatment to mentally ill and developmentally disabled individuals in a wide range of mental health programs. They work with, care for, and take direct charge of patients with various kinds of disabilities, including psychotic and emotionally disturbed adults, children, and adolescents; the acute and chronically ill; the mentally retarded; the aged; and alcoholics and drug abusers. Working under the supervision of a psychiatrist, psychologist, social worker, registered nurse, or senior psychiatric health technician, they participate in both the development of patient treatment plans and their implementation. Mental health technicians work in mental health hospitals and clinics, drug and alcohol clinics, schools for the mentally retarded, nursing homes, and community rehabilitation programs for the mentally ill and retarded such as halfway houses, sheltered workshops, and social rehabilitation centers.

These technicians differ from other health professionals because they function primarily as generalists in the field of mental health. Their main responsibility is to assist patients to achieve their maximum level of functioning. To this end, they work directly with individual clients and their families, as well as with other health professionals, to ensure that treatment and rehabilitation plans are carried out effectively. Typical work activities include interviewing patients and families, gathering and recording data, providing behavior modification counseling, and conducting individual and group counseling sessions. In addition, technicians must be skilled in such nursing techniques as taking temperatures, counting pulse and respiration, measuring blood pressure, and assisting in the administration of medications and physical treatments. Mental health technicians are also responsible for instructing patients in social skills and basic physical care, conducting behavior therapy programs, and assisting patients in resolving employment, housing, and personal finance problems.

Although psychiatric/mental health technicians are usually generalists in the mental health field, there has been a movement toward specialization in some states. For example, in California technicians may work as specialists in the problems of mentally disturbed children or as clinical trainers for the developmentally disabled. Other specialties include work as counselors in substance abuse programs and work in psychiatric emergency or crisis intervention programs. When a patient's problems are beyond the expertise of the technician, the patient is referred to professional specialists.

Educational and Legal Requirements

Educational requirements for this work include graduation from high school, plus completion of one or two years of specialized study in a hospital or community college program. Students attending community college are awarded an associate of arts or associate of science degree in mental health technology on successful completion of the program, which usually consists of 60 to 70 semester hours of training. Regardless of whether studies are undertaken in a hospital or community college, prospective technicians can expect the curriculum to include most of the following

courses: basic and psychiatric nursing; general and abnormal psychology; child development and growth; mental health technology; group dynamics; general studies (English, history, mathematics); and field and practical courses (working under supervision with clients in a mental health program). In addition to completing these educational courses, the prospective technician must have a stable personality and relate well to people so as to function smoothly with clients, their families, and professional staff members.

At present there is no national certification program involving psychiatric/mental health technicians. However, five states (Arkansas, California, Colorado, Kansas, and Michigan) have licensing requirements for these technicians, and specific information regarding qualifications can be obtained by contacting the licensing agencies of the respective states.

Employment Opportunities

Job opportunities for psychiatric/mental health technicians are expected to increase, due in large part to the present trend of returning previously hospitalized persons to various community health programs. In addition, expanded use of paraprofessionals in all areas of health care is anticipated because of the escalating costs of medical care. The use of these paraprofessionals is expected to reduce costs without jeopardizing the quality of care.

Many programs throughout the country use psychiatric/mental health technicians, but because this is a relatively new occupation, there are no clearly defined promotional lines in many cases. However, this is expected to change as mental health programs expand throughout the nation. In addition, the emergence of new or expanded undergraduate and graduate programs in mental health in many states can serve as a means for advancement. In general, advancement is achieved by gaining experience, developing competence and leadership ability, and pursuing continuing education. In some cases, promotions are governed by civil service regulations, and advancement is based on experience and the successful passage of promotional examinations.

Psychiatric Aides

Work Description

Psychiatric aides, who are also known as mental health assistants and psychiatric nursing assistants, care for mentally impaired or emotionally disturbed individuals. They work as part of a team that may include psychiatrists, psychologists, psychiatric nurses, social workers, and therapists. In addition to helping patients dress, bathe, groom themselves, and eat, psychiatric aides socialize with patients and lead them in educational and recreational activities. Psychiatric aides may play games such as cards with patients, watch television with them, or participate in group activities such as sports or field trips. They observe patients and report any physical or behavioral signs that might be important for the professional staff to know. They accompany patients to and from wards for examination and treatment. Because they have the closest contact with patients, psychiatric aides have a great deal of influence on their outlook and treatment.

Work Environment

Most full-time aides work about 40 hours per week, but because patients need care 24 hours a day, some aides work evenings, nights, weekends, and holidays. Many work part-time. Aides spend many hours standing and walking, and they often face heavy workloads. Because they may have to move patients in and out of bed or help them stand or walk, aides must guard against back injury.

Psychiatric aides must be prepared to care for patients whose illness may cause violent behavior. While their work can be emotionally demanding, many aides gain satisfaction from assisting those in need.

Educational and Legal Requirements

In many cases, neither a high school diploma nor previous work experience is necessary for a job as a nursing or psychiatric aide. A few employers, however, require some training or experience.

In general, applicants should be healthy, tactful, patient, understanding, emotionally stable, dependable, and desiring to help people. They should also be able to work as part of a team, have good communication skills, and be willing to perform repetitive, routine tasks.

Opportunities for advancement within these occupations are limited. To enter other health occupations, aides generally need additional formal training. Some employers and unions provide opportunities by simplifying the educational paths to advancement. Experience as an aide can also help individuals decide whether to pursue a career in the health care field.

Employment Trends

Psychiatric aides held about 95,000 jobs in 1999. Most worked in psychiatric units of general hospitals, psychiatric hospitals, state and county mental institutions, homes for mentally retarded and psychiatric patients, and community mental health centers.

In the future, employment of psychiatric aides is expected to grow more slowly than the average for all occupations. Employment will rise in response to the sharp increase in the number of older persons—many of whom will require mental health services. Employment of aides in outpatient community mental health centers is likely to grow because of increasing public acceptance of formal treatment for drug abuse and alcoholism and a lessening of the stigma attached to those receiving mental health care. However, employment in hospitals—where one-half of all psychiatric aides work—is likely to decline due to attempts to contain costs by limiting inpatient psychiatric treatment.

Replacement needs will constitute the major source of openings for aides. Turnover is high, a reflection of the modest entry requirements, low pay, and lack of advancement opportunities in this profession.

Earnings

The latest data shows that median hourly earnings of psychiatric aides were \$10.66. The middle 50 percent earned between \$8.33 and \$13.36 per hour. The lowest 10 percent earned less than

\$6.87 and the highest 10 percent earned more than \$15.28 per hour. Median hourly earnings of psychiatric aides in 1997 were \$11.20 in state government and \$9.80 in hospitals.

Aides in hospitals generally receive at least one week's paid vacation after one year of service. Paid holidays and sick leave, hospital and medical benefits, extra pay for late-shift work, and pension plans are also available to many hospital and some nursing home employees.

Related Occupations

Nursing and psychiatric aides help people who need routine care or treatment. In this way, they resemble home health and personal care aides, child care workers, companions, occupational therapy aides, and physical therapy aides.

Additional Information

Information about employment opportunities may be obtained from local hospitals, nursing homes, psychiatric facilities, state boards of nursing, and local offices of the state employment service.

For information about a career as a psychiatric aide and schools offering training, contact:

- National Association of Health Career Schools, 2301 Academy Dr., Harrisburg, PA 17112.

Chapter 19



Respiratory Care Practitioners

Key Terms

Blood pH	Committee on Accreditation for Respiratory Care (CoARC)
Lung capacity	Certified Respiratory Therapist Technician (CRT)
Arterial blood sample	Registered Respiratory Therapist (RRT)
Chest physiotherapy	Cardiopulmonary diseases
Aerosol	
Oxygen/oxygen mixture	
Ventilator	

Maintaining the Breath of Life

A person can live without water for a few days and without food for a few weeks. But if someone stops breathing for more than a few minutes, serious brain damage occurs. If oxygen is cut off for more than nine minutes, death usually results. Respiratory therapists, also known as respiratory care personnel, specialize in the evaluation, treatment, and care of patients with breathing disorders. Whenever the breath of life is at risk, the respiratory therapist is called upon to intervene. Respiratory therapists perform procedures crucial in maintaining the lives of seriously ill patients with breathing problems and assist in the treatment of patients with heart and lung diseases and disorders.

Respiratory Therapists

Work Description

Respiratory care therapists work to evaluate, treat, and care for patients with breathing disorders. They work under the direction of a physician.

Most respiratory therapists work with hospital patients in three distinct phases of care: diagnosis, treatment, and patient management. In the area of diagnosis, therapists test the capac-

ity of the lungs and analyze the oxygen and carbon dioxide concentrations and potential of hydrogen (*blood pH*), a measure of the acidity or alkalinity level of the blood. To measure *lung capacity*, the therapist has the patient breathe into a tube connected to an instrument that measures the volume and flow of air during inhalation and exhalation. By comparing the reading with the norm for the patient's age, height, weight, and sex, the therapist can determine whether lung deficiencies exist.

To analyze oxygen, carbon dioxide, and pH levels, therapists need an *arterial blood sample*, for which they generally draw arterial blood. This procedure requires greater skill than is the case for routine tests, for which blood is drawn from a vein. Inserting a needle into a patient's artery and drawing blood must be done with great care; any slip can damage the artery and interrupt the flow of oxygen-rich blood to the tissues. Once the sample is drawn, it is placed in a gas analyzer, and the results are relayed to the physician.

Treatment of patients, such as premature infants whose lungs are not fully developed or elderly people whose lungs are diseased, is another important job duty. Treatment may range from giving temporary relief to patients with chronic asthma or emphysema to emergency care for heart failure, stroke, drowning, or shock. The three most common treatments, however, are chest physiotherapy, aerosol medication, and oxygen mixtures.

Chest physiotherapy is generally performed on patients who have undergone surgery. Anesthesia depresses respiration, so this treatment may be prescribed to help return the patient's lungs to their normal level of functioning and prevent the lungs from becoming congested. Chest physiotherapy also is used on patients suffering from lung diseases that cause increased amounts of sticky mucus to collect in the lungs. Chest physiotherapy helps remove mucus, making it easier for the patient to breathe. In chest physiotherapy, the patient is placed in a position to help drain mucus from the lungs. The therapist thumps and vibrates the patient's rib cage (percussion), after which the patient is instructed to cough. This procedure not only stimulates the lungs to expand, but also helps clear lungs of congestion. This process helps prevent respiratory illnesses that could complicate recovery.

Respiratory therapists also administer *aerosols*. Generally these formulations are liquid medications suspended in a gas that forms a mist that is inhaled. Therapists may either administer the medicine themselves or teach patients how to do so. In either case, the therapist must instruct the patient about how to inhale the aerosol properly. If the medicine is inhaled improperly, it will be ineffective.

Respiratory therapists use various kinds of equipment to administer *oxygen* and *oxygen mixtures*. In one case, a patient may need an increased concentration of oxygen. The therapist simply places an oxygen delivery device, such as a mask or a nasal cannula, on the patient and sets the oxygen flow at the level prescribed by the physician. In the case of a patient who cannot breathe on his or her own—someone who has undergone heart surgery, for example—the therapist would connect the patient to a *ventilator*, a machine that pumps air into the lungs. The therapist inserts a tube through the patient's mouth into the trachea, or windpipe; connects the tube to the ventilator; and sets the rate, volume, and oxygen concentration of the air entering the patient's lungs.

Monitoring patients who are using oxygen and ventilators occupies a good portion of the therapist's day. Patients and equipment must be checked regularly. If the patient appears to be having difficulty or if the oxygen, carbon dioxide, or pH level of the blood is unstable, the ventilator setting must be changed. The therapist alerts the doctor and adjusts the ventilator according to the physician's order. In addition, therapists continually check equipment to ensure that there are no mechanical complications and that the equipment is in working condition.

Providing respiratory care at home is a rapidly expanding area of practice. Respiratory therapists have long administered oxygen to patients in their homes. Increasingly, however, mechanical ventilators and other sophisticated life support systems are being used in the home. Therapists teach patients and their families how to use the equipment. Many of the people who receive home respiratory care will need it for the rest of their lives. They are taught how to operate complex equipment themselves, with several visits a month from respiratory thera-

pists to inspect or clean the equipment and ensure its proper use.

Respiratory therapists often conduct rehabilitation classes, such as low-impact aerobic exercise classes, to help patients who suffer from chronic lung problems. They also conduct smoking cessation programs for hospital patients and others in the community who want to kick the tobacco habit.

Other duties include keeping records of the cost of materials and charges to patients, and maintaining and making minor repairs to equipment.

Therapists are increasingly being asked to perform tasks that fall outside of their traditional role. They are moving into cardiopulmonary procedures such as electrocardiograms and stress testing, but also perform other tasks such as drawing blood samples from patients. Some therapists teach or supervise other respiratory therapy personnel.

Work Environment

Respiratory therapists generally work between 35 and 40 hours per week. Because hospitals operate around the clock, therapists may work evenings, nights, or weekends. Respiratory therapists spend long periods standing and walking between patients' rooms. In an emergency, they work under a great deal of stress. Gases used by respiratory therapists are hazardous because they are used and stored under pressure. As with many health occupations, respiratory therapists who perform blood gas analysis run a risk of catching an infectious disease, such as AIDS, from accidental pricking of a needle. However, adherence to safety precautions and regular maintenance and testing of equipment minimize the risk of injury.

Employment Opportunities

Most recently, respiratory therapists held about 110,000 jobs. About 9 out of 10 jobs were in hospitals, departments of respiratory care, therapy clinics, anesthesiology, or pulmonary medicine. Nursing homes and home health agencies accounted for most of the remaining jobs.

Educational and Legal Requirements

Respiratory care equipment has become increasingly complex, and formal training is necessary for entry into this field. Training for respiratory therapy is offered at the postsecondary level in hospitals, medical schools, colleges and universities, trade schools, vocational-technical institutes, and the armed forces.

Some programs prepare graduates for jobs as registered respiratory therapists (RRT); other, shorter programs lead to jobs as certified respiratory therapists (CRT). According to the *Committee on Accreditation for Respiratory Care (CoARC)*, there were 327 registered respiratory therapist programs and 134 certified respiratory therapist programs in the United States in 1999.

Formal training programs vary in length and in the credential or degree awarded. Most of the CoARC-accredited registered respiratory therapist programs last two years and lead to an associate's degree. Others are four-year bachelor's degree programs. Areas of study for respiratory therapy programs include human anatomy and physiology, chemistry, physics, microbiology, and mathematics. Technical courses deal with procedures, equipment, and clinical tests.

An increasing number of therapists are receiving on-the-job training, allowing them to administer electrocardiograms and stress tests as well as draw blood samples from patients.

The National Board for Respiratory Care offers voluntary certification and registration to graduates of CoARC-accredited programs. Two credentials are awarded to respiratory care practitioners who satisfy the requirements: *Certified Respiratory Therapy (CRT)* and *Registered Respiratory Therapist (RRT)*. All graduates—those from two- and four-year programs in respiratory therapy, as well as those from one-year technician programs—may take the CRT examination. CRTs who meet education and experience requirements can take a separate examination, leading to the award of the RRT.

Individuals who have completed a four-year program in a non-respiratory field but who have college-level courses in anatomy, physiology, chemistry, biology, microbiology, physics, and mathematics can become a CRT after graduating from an accredited one- or two-year program. After they complete two years of clini-

cal experience, they are eligible to take the registry exam to become an RRT.

Most employers require that applicants for entry-level or generalist positions hold the CRT or be eligible to take the certification examination. Supervisory positions and those in intensive care specialties usually require the RRT (or RRT eligibility).

People who want to enter this field should enjoy working with people and should be sensitive to patients' physical and psychological needs. Respiratory therapy workers must pay attention to details, follow instructions, and work as part of a team. Operating complicated respiratory therapy equipment requires mechanical ability and manual dexterity.

High school students interested in a career in respiratory care are encouraged to take courses in health, biology, mathematics, chemistry, and physics; a working knowledge of science and mathematics is essential. Respiratory care involves basic mathematical problem solving—an ability to use percentages, fractions, logarithms, exponents, and algebraic equations, and a knowledge of the English and metric systems of measuring. Calculus is not required but is helpful. An understanding of chemical and physical principles such as gas laws, the states of matter, chemical reactions at the atomic level, and the periodic table is also important. Computing medication dosages and calculating gas concentrations are just two examples of the need for knowledge of science and mathematics.

Respiratory therapists advance in clinical practice by moving from care of “general” to “critical” patients. Additional knowledge and skills are needed to provide respiratory care for patients with significant problems in other organ systems such as the heart or kidneys.

Respiratory therapists, especially those with four-year degrees, may also advance to supervisory or managerial positions in a respiratory therapy department. Respiratory therapists in home care and equipment rental firms may become branch managers.

The field of education also offers opportunities for career development. Jobs for hospital in-service educators are available for therapists with teaching skills. Many therapists have found careers as instructors in respiratory therapy education programs; with additional academic preparation, they are eligible to advance

to professor or program director. Other therapists leave the field to work as sales representatives for equipment manufacturers.

Employment Trends

Job opportunities are expected to remain good. Employment of respiratory therapists is expected to increase much faster than the average for all occupations through the year 2008, because of substantial growth of the middle-aged and elderly population—a development that will heighten the incidence of cardiopulmonary disease.

Older Americans suffer most from respiratory ailments and *cardiopulmonary diseases* such as pneumonia, chronic bronchitis, emphysema, and heart disease. As this population grows, the need for respiratory therapists will increase as well. In addition, advances in treating victims of heart attacks, accident victims, and premature infants (many of whom are dependent on a ventilator during part of their treatment) will increase the demand for the services of respiratory care practitioners. Opportunities are expected to be highly favorable for respiratory therapists with cardiopulmonary care skills and experience working with infants.

Although hospitals will continue to employ the vast majority of therapists, a growing number of therapists can expect to work outside of hospitals in home health agencies, respiratory therapy clinics, or nursing homes. Very rapid growth is also expected in home health agencies, equipment rental companies, and firms that provide respiratory care on a contract basis.

Growth in this occupation is likely to be constrained by hospitals' efforts to control costs. Changes in the way hospitals are paid for the services they provide are altering financial incentives; services such as respiratory care are no longer as profitable to the hospital as they once were. This, in turn, is causing hospital administrators and third-party payers (chiefly Medicare, Medicaid, and insurance companies) to try to be more selective about respiratory care, limiting its use to situations in which it is clearly appropriate and beneficial.

The outlook for respiratory therapists will also be affected by developments within the profession. As treatment methods have changed in response to the rapidly growing body of knowledge in medicine, respiratory care departments have taken on new duties.

For example, a therapist may now perform EKGs and monitor heart functions, duties previously performed by other hospital personnel. If the trend toward multicompetent therapists takes hold, it could mean more jobs for respiratory therapists than currently anticipated.

At the same time, respiratory therapists are branching out into various specialties. A therapist who develops expertise with cardiac patients may transfer to a position as a cardiopulmonary technologist, for example. Especially in academic medical centers and other hospitals that provide the most advanced specialty care, the emergence of such new occupational specialties could slow growth in the number of respiratory care generalists.

Home health care is a bright spot on the horizon, but it is important to bear in mind that this very rapidly growing field accounts for a relatively small share of respiratory therapy jobs. Opportunities in respiratory care should be highly favorable at least through the year 2008 in home health agencies, equipment rental companies, and firms that provide respiratory care on a contract basis. Hospital-based home health programs will provide excellent job prospects, too. As in other health care occupations, however, most job openings will result from the need to replace workers who transfer to other jobs or stop working altogether.

Earnings

According to the most recent information, median annual earnings for respiratory therapists were \$37,680. The middle 50 percent earned between \$31,140 and \$43,340 per year. The lowest 10 percent earned less than \$28,620 and the highest 10 percent earned more than \$50,660 per year.

Related Occupations

Respiratory therapy workers, under the supervision of a physician, administer respiratory care and life support to patients with heart and lung difficulties. Other workers who care for, treat, or train people to improve their physical condition include dialysis technicians, registered nurses, occupational therapists, physical therapists, and radiation therapy technologists.

Additional Information

Information concerning a career in respiratory care is available from:

- American Association for Respiratory Care, 11030 Ables Ln., Dallas, TX 75229-4593. Internet: <http://www.aarc.org>.

Information on becoming credentialed as a respiratory therapy practitioner can be obtained from:

- National Board for Respiratory Care, Inc., 8310 Nieman Rd., Lenexa, KS 66214-1579. Internet: <http://www.nbrc.org>.

For the current list of CoARC-accredited educational programs for respiratory therapy occupations, write to:

- Committee on Accreditation for Respiratory Care, 1248 Harwood Rd., Bedford, TX 76021-4244. Internet: <http://www.coarc.com>.

Chapter 20



Physical Therapy

Key Terms

Assistive devices	American Physical Therapy Association (APTA)
Physical therapist	Manual dexterity
Functional independence	Rehabilitation
Passive exercise	Sports medicine
Documentation	Physical therapist assistant
Research	Physical therapist aide

Physical therapy is a health profession whose primary purpose is the promotion of optimal human health and function through the application of scientific principles to prevent, identify, assess, correct, or alleviate acute or prolonged movement dysfunction. Physical therapy encompasses areas of specialized competence and includes the development of new principles and applications to effectively meet existing and emerging health needs. Physical therapists restore, maintain, and promote overall fitness and health. Their patients include accident victims and individuals with disabling conditions such as low back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy. Other professional activities that serve the purpose of physical therapy are research, education, consultation, and administration.

The therapeutic interventions possible include, but are not limited to, the use of therapeutic exercise with or without assistive devices, physical agents, electricity, manual procedures such as joint and soft tissue mobilization, neuromuscular reeducation, bronchopulmonary hygiene, and ambulation or gait training.

Tests and measurements are used to evaluate muscle strength, force, endurance, and tone; joint motion, mobility, and stability; reflexes and automatic reactions; movement skill and accuracy; sensations and perception; peripheral nerve integrity; locomotor skill, stability, and endurance; activities of daily living; cardiac, pulmonary, and vascular functions; fit, function, and comfort of prosthetic, orthotic, and other *assistive devices*; posture and body mechanics; limb length, circumference, and volume; thoracic excursion and breathing patterns; vital signs; photosensitivity; and home and work physical environments.

Physical Therapists

Work Description

Physical therapists plan, organize, and administer treatment based on a knowledge of each patient's condition, so as to restore functional mobility, relieve pain, and prevent or limit permanent disability for those suffering from a disabling injury or disease. Their patients may include accident or stroke victims or handicapped individuals. Among the conditions likely to require treatment by physical therapists are multiple sclerosis, cerebral palsy, nerve injuries, fractures, amputations, arthritis, and heart disease, with patients varying in age from the newborn to the elderly.

During the patient evaluation, the physical therapist performs tests and measurements that provide information about the status of the musculoskeletal, neurological, pulmonary, and cardiovascular systems and the individual's *functional independence*.

Patients with the following conditions are referred for consultation to the physical therapist: spinal cord and column pathologies, myopathies, neurological impairments, sports injuries, soft tissue injuries, orthopedic trauma and postoperative conditions, jaw, facial, and neck dysfunctions, connective tissue diseases, dermatological conditions, body malalignments, cardiovascular impairments, and arthritic conditions.

Physical therapists may acquire advanced knowledge and skills through clinical experience and postgraduate education in specialty areas of practice.

The physical therapist is legally and ethically responsible for planning, implementing, and evaluating a physical therapy program. This responsibility may include instructing patients and their families and supervising physical therapist assistants, physical therapy aides, students, and other health workers in carrying out the program or selected parts of it.

Because treatments may be prolonged, the full cooperation of the patient is very important. As a first step, therefore, a physical therapist must become familiar with a patient's personal background as well as medical history, and make an effort to gain the patient's trust and confidence. The quality of the therapist-patient relationship can make a big difference in the effectiveness of the treatment.

Next, the physical therapist conducts an evaluation. Tests are performed and measurements taken to determine a patient's strengths, weaknesses, and ability to function. The exact nature of an evaluation and the time required to conduct it depend on the type and severity of the injury or impairment. For instance, football players with knee injuries usually require less evaluation time than automobile accident victims suffering from a variety of injuries such as broken bones and head injuries.

After reviewing the patient's medical records and completing the appropriate assessments, the therapist interprets the findings and develops a treatment plan, a process that requires a high level of clinical problem-solving skills. The goal is to help patients attain maximum functional independence, muscle strength, and physical skills, while helping them adapt to what may be drastic changes in their physical abilities and lifestyles.

Physical therapists often consult and practice with a variety of other professionals, such as physicians, dentists, nurses, educators, social workers, occupational therapists, speech-language pathologists, and audiologists. Some physical therapists treat a wide range of ailments; others specialize in areas such as pediatrics, geriatrics, orthopedics, sports medicine, neurology, and cardiopulmonary physical therapy.

The treatments given by the physical therapist include exercises for increasing strength, endurance, coordination, and range of motion; use of heat, cold, electricity, sound, and water to relieve pain and stimulate motor activity; and instruction in activities of daily living and the use of assistive devices, such as crutches, prostheses, and wheelchairs.

Initial treatment may be nothing more than helping a bedridden patient become used to being in an upright position. Such patients often lose strength and flexibility in their limbs and trunk. A physical therapist may use a special tilt-table to help rebuild leg strength by slowly raising a patient from a horizontal to a vertical position. *Passive exercise* is another technique that therapists use. Patients who have been immobile for long periods of time often become stiff in the joints, losing flexibility in muscles, connective tissues, and tendons. To regain flexibility, the patient relaxes while the therapist stretches and manipulates the patient's extremities, according to the patient's tolerance. Another portion of the treatment may include the application of heat, electricity, or ultrasound to relieve pain or improve the condition of muscles or related tis-

sues. Cold, light, and water may be used in other treatments, including the reduction of swelling and the treatment of burns.

The therapist may introduce additional therapeutic techniques designed to improve flexibility, strength, endurance, and coordination. These may include resistance exercises with weights to strengthen particular body parts, or gymnastic exercises designed to improve balance and coordination. For patients who have suffered some permanent disability, the therapist may give instruction in the use of assistive devices and training on how to perform daily activities. To perform these duties, therapists must have detailed knowledge of human anatomy and physiology and know what steps to take in treating the effects of disease and injury. Therapists need to be sensitive and supportive as well as technically proficient because their patients, particularly those who are newly disabled, are likely to experience both emotional and physical stress.

Physical therapy can be more effective and progress faster if there is a coordinated effort between the therapist, the patient, and the family to establish and implement specific goals and clearly understood treatment plans. This may require instruction on how to conduct prescribed therapies at home. Patients and families may need specific training such as in the techniques of muscle contraction and relaxation or in the care and use of braces or prosthetic appliances.

As treatment progresses, physical therapists monitor and assess their patients in order to identify problems and evaluate progress. Periodic evaluations help them decide whether to continue, modify, or end a course of treatment. Physical therapists may provide treatment personally or supervise the work of another therapist or a physical therapist assistant.

All therapists keep a variety of notes and records, such as initial evaluations, daily progress notes, physician reports, internal staff notes, interdisciplinary conference notes, and discharge notes. *Documentation* must be maintained to track the patient's progress and to identify areas requiring more or less attention in subsequent visits. Records are also kept for legal purposes; physical therapists are legally responsible for their actions whenever they evaluate a patient, plan a physical therapy program, and carry it out. Finally, accurate records are needed to justify the cost of each treatment for reimbursement.

Research is another important aspect of physical therapy. Clinical research is being conducted to develop more effective

treatment and methods of evaluation in an effort to improve patient care and patient outcomes.

Work Environment

Physical therapists practice in hospitals, clinics, and private offices that have specially equipped facilities. Alternatively, they may treat patients in hospital rooms, homes, or schools.

Most physical therapists work a 40-hour week, which may include some evenings and weekends. The job can be physically demanding. Duties may require the therapist to stoop, kneel, crouch, and stand for long periods of time. In addition, therapists move equipment and help patients turn, stand, or walk. Physical therapy can be emotionally demanding, and the frustration that can result from seeing little or no improvement over time can contribute to stress.

Employment Opportunities

Most recently, physical therapists held about 132,000 jobs; about one in four worked part-time. The number of jobs is greater than the number of practicing physical therapists because some physical therapists hold two or more jobs. For example, some may have a private practice, but also work part-time in another health facility. About 1 in 10 physical therapists held more than one job in 1998.

More than two-thirds of all physical therapists are employed in either hospitals or offices of physical therapists. Other jobs are found in home health agencies, outpatient rehabilitation centers, offices and clinics of physicians, and nursing homes. Some physical therapists are self-employed in private practices. They may provide services to individual patients or contract to provide services in hospitals, rehabilitation centers, nursing homes, home health agencies, adult day care programs, and schools. They may be in solo practice or work as part of a consulting group. Physical therapists also teach in academic institutions and conduct research.

Educational and Legal Requirements

All states, the District of Columbia, and the Commonwealth of Puerto Rico require a license to practice physical therapy. Applicants must have a degree or certificate from an accredited physical

therapist educational program prior to taking the licensure examination.

According to the *American Physical Therapy Association (APTA)*, there were 189 accredited physical therapy programs in 1999. Of the accredited programs, 24 offered bachelor's degrees, 157 offered master's degrees, and 8 offered doctoral degrees. By 2002, all physical therapy programs seeking accreditation will be required to offer degrees at the master's degree level and above, in accordance with the Commission on Accreditation in Physical Therapy Education.

Physical therapist programs start with basic science courses such as biology, chemistry, and physics, and then introduce specialized courses such as biomechanics, neuroanatomy, human growth and development, manifestations of disease and trauma, evaluation and assessment techniques, research, and therapeutic procedures. Besides classroom and laboratory instruction, students receive supervised clinical experience in hospitals.

An individual who has a four-year degree in a related field, such as genetics or biology, and wants to become a physical therapist should enroll in a master's-level physical therapy program. A master's degree is also recommended for those with a bachelor's degree in physical therapy who are interested in being promoted to an administrative position or in attaining a research or teaching job.

Competition for entry to physical therapy programs is very intense. Consequently, students interested in enrolling in physical therapy programs must attain superior grades in high school and college, especially in science courses. High school courses that are useful include health, biology, chemistry, social science, mathematics, and physics. Individuals who want to determine whether they have the personal qualities needed for this occupation are advised to volunteer for summer or part-time work in the physical therapy department of a hospital or clinic. Indeed, such experience is required for admission to most educational programs.

Personal traits that physical therapists need include patience, tact, good listening skills, problem-solving skills, persuasiveness, resourcefulness, and emotional stability to help patients and their families understand treatments and adjust to handicaps. Physical therapists also should have *manual dexterity* and physical stamina.

Like all professionals in health fields, practicing physical therapists are expected to participate in lifelong learning. Continuing

education courses, workshops, and symposia are offered by professional associations, private consultants, and colleges and universities. Continuing education is required by law to maintain licensure in a number of states.

Employment Trends

Employment of physical therapists is expected to grow much faster than the average for all occupations through the year 2008 in response to the rapidly growing need for *rehabilitation* and long-term care services. Advances in rehabilitation medicine and therapeutic techniques are likely to create additional demand. Other openings will result from replacement needs.

Federal legislation imposing limits on reimbursement for therapy services may, however, adversely affect the job market for physical therapists in the near term. As a consequence, the majority of employment growth for physical therapists is expected to occur in the second half of the forecast period.

Most new positions for physical therapists will result from the expansion of services for people with physical disabilities—a highly diverse group that includes the elderly, whose numbers are rising sharply. Especially rapid growth is projected for the population aged 85 and older, a group that suffers a high incidence of disabling conditions such as arthritis or stroke. Also, some surgical procedures are more common among elderly patients. Anticipated increases in hip replacements, knee replacements, and other surgical procedures used to treat diseased or arthritic joints, as well as other conditions, will heighten demand for postoperative physical therapy.

As the baby-boom generation moves into middle age, a period of increased risk of heart disease and stroke, demand for cardiac rehabilitation programs is expected to rise sharply. Younger persons, too, will need physical therapy. Advances in medical technology have saved lives that only a few years ago would have been lost: children with severe birth defects, for example, and car accident victims, a disproportionate number of whom are teenagers and young adults. Advanced biomedical developments will permit

even more people to survive traumas that in the past would have been fatal, thereby creating a need for rehabilitative care.

Other factors likely to spur demand for physical therapy services include the growing importance of *sports medicine* and widespread interest in health promotion. As more people engage in regular exercise programs, the number of injuries requiring physical therapy treatment grows as well. Industrial health programs are also growing in popularity. Various industries are employing physical therapists to perform work site evaluations, develop exercise programs, and teach safe work habits in hopes of reducing injuries in the workplace.

The anticipated growth of hospital-based outpatient services is expected to cause hospitals to remain a major employer of physical therapists. Turnover will create many openings for hospital-based physical therapists as experienced therapists transfer to other practice settings or leave the profession.

Restructuring of the health industry, together with a continuation of favorable third-party reimbursement policies, will contribute to very rapid growth in the number of physical therapists in private practice. Also expected to spur growth in the number of private practitioners is the practice of relying on contract personnel to provide therapeutic and rehabilitation services in nursing homes and home health agencies.

Home health is an increasingly important area of practice, not only because of changes in the treatment provided in hospitals, but also because of the prevalence of functional disabilities among older persons and consumer preference for health care in homes or community-based settings. The home health field has experienced spectacular growth and should provide very good opportunities for physical therapists.

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

Job prospects in physical therapy should continue to be excellent. New graduates are in great demand, and the number of people completing training programs is expected to fall short of that needed to fill the new job openings. Although the number of

graduates has increased in recent years, the demand for physical therapy services has grown at an even greater rate. If the number of graduates remains at current levels while demand for rehabilitation services continues to grow, prospects for job seekers in the future may become even more favorable than they are today.

Earnings

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

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

Related Occupations

Physical therapists are concerned with the treatment and rehabilitation of persons with physical disabilities. Others who do similar work include occupational therapists, speech-language pathologists and audiologists, prosthetists, respiratory therapists, and orthodontists.

Additional Information

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

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

Physical Therapy Assistants and Aides

Work Description

Physical therapist assistants and aides perform components of physical therapy procedures and related tasks as selected and delegated by a supervising physical therapist. These workers assist physical therapists in providing services that help improve mobility, relieve pain, and prevent or limit permanent physical disabilities of patients who are suffering from injuries or disease. Patients include accident victims and individuals with disabling conditions such as low back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy.

Physical therapist assistants perform a variety of tasks. Treatment procedures delegated to these workers, under the direction of therapists, include exercises, massages, electrical stimulation, paraffin baths, hot and cold packs, traction, and ultrasound. Physical therapist assistants record the patients' responses to treatment and report to the physical therapist the outcome of each treatment.

Physical therapist aides help make therapy sessions more productive, under the direct supervision of a physical therapist or physical therapist assistant. They are usually responsible for keeping the treatment area clean and organized and for preparing for each patient's therapy. When patients need assistance in moving to or from a treatment area, aides push them in a wheelchair or provide them with a shoulder to lean on. Because they are not licensed, aides perform a more limited range of tasks than physical therapist assistants do.

The duties of aides include some clerical tasks, such as ordering supplies, answering the phone, and filling out insurance forms and other paperwork. The extent to which an aide or an assistant performs clerical tasks depends on the size and location of the particular facility.

Work Environment

The working environment for physical therapist assistants and aides varies with the environment of the therapists with whom they work. Usually, a large company or hospital will require the

types of services given by assistants and aides. Some independent physical therapy practitioners also employ either assistants or aides for tasks that can be delegated.

Physical therapist assistants and aides need to have a moderate degree of strength, reflecting the physical exertion required to assist patients with their treatment. For example, in some cases, assistants and aides need to help lift patients. Additionally, constant kneeling, stooping, and standing for long periods are all part of the job.

Educational and Legal Requirements

Physical therapist assistants typically have earned an associate's degree from an accredited physical therapist assistant program. As of January 1999, 44 states and Puerto Rico required assistants to be certified or licensed. Other requirements include certification in CPR and first aid, and a minimum number of hours of clinical experience.

According to the APTA, there were 274 accredited physical therapist assistant programs in the United States in 1999. Accredited physical therapy assistant programs are designed to last two years, or four semesters, and culminate in an associate's degree. Admission into physical therapist assistant programs is competitive, and it is not unusual for colleges to have long waiting lists of prospective candidates. The programs are divided into academic study and hands-on clinical experience. Academic coursework initially includes algebra, anatomy and physiology, biology, chemistry, and psychology. Before students embark on their clinical field experience in a hospital or private clinic, many programs require that students complete a semester of anatomy and physiology and be certified in CPR and first aid. Both educators and prospective employers view clinical experience as an integral part of ensuring that students understand the responsibilities of a physical therapist assistant.

Employers typically require physical therapist aides to have a high school diploma, strong interpersonal skills, and a desire to assist people in need. Most employers provide aides clinical training on the job.

Earnings

Most recently, median annual earnings of physical therapist assistants were \$33,870. The middle 50 percent earned between \$28,830 and \$40,440. The lowest 10 percent earned less than \$23,150, and the highest 10 percent earned more than \$45,610. Median annual earnings of physical therapist assistants were \$33,660 in offices of other health care practitioners and \$33,820 in hospitals.

Median annual earnings of physical therapist aides were \$19,670. The middle 50 percent earned between \$16,460 and \$23,390. The lowest 10 percent earned less than \$14,590, and the highest 10 percent earned more than \$28,800. Median annual earnings of physical therapist aides were \$18,320 in offices of other health care practitioners and \$19,840 in hospitals.

Employment Trends

Most recently, physical therapist assistants and aides held 82,000 jobs. They work alongside physical therapists in a variety of settings. More than two-thirds of all assistants and aides work in hospitals or offices of physical therapists. Others work in nursing and personal care facilities, outpatient rehabilitation centers, offices and clinics of physicians, and home health agencies.

Employment of physical therapist assistants and aides is expected to grow much faster than the average for all occupations through the year 2008. As noted earlier, federal legislation imposing limits on reimbursement for therapy services may continue to adversely affect the job market for physical therapist assistants and aides in the near term. As a result, the majority of expected employment growth for physical therapist assistants and aides is expected to occur in the second half of the forecast period.

Generally, demand for physical therapist assistants and aides will continue to rise as the median age of Americans increases. The elderly consume a disproportionate share of physical therapy services. As the baby boom generation ages, demand for services associated with geriatric medicine will grow significantly. Older patients often need more assistance in their treatment, making the roles of assistants and aides vital.

Related Occupations

People with similar occupations include associate degree nurses, nursing assistants, medical assistants, licensed practical nurses, and radiology and respiratory therapy assistants and aides.

Additional Information

Additional information on a career as a physical therapy assistant may be obtained from:

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

For information about licensure or registration in the state where practice is desired, write to the licensure board in that state. For additional information, refer to the Web page of physical therapists, <http://www.apta.org>.

Chapter 21



Occupational Therapy

Key Terms

Multidisciplinary team	Emotional disorders
Cognitive skills	Rehabilitation center
Perceptual skills	Registered occupational therapist (OTR)
Adaptive equipment	Occupational therapy aide/assistant
Home health care	

Occupational Therapists

Work Description

Occupational therapists treat people with mental, physical, developmental, or emotional disabilities. They employ a variety of techniques designed to help individuals develop or maintain daily living skills and to cope with the physical and emotional effects of disability. With support and direction from the therapist, patients learn (or relearn) many of the “ordinary” tasks that are performed every day at home, at work, at school, and in the community. The therapist’s goal is to help clients establish a lifestyle that is as independent, productive, and satisfying as possible.

Like other health professionals, occupational therapists often work as members of a *multidisciplinary team* whose members may include a physician, nurse, physical therapist, psychologist, rehabilitation counselor, and social worker. Team members evaluate the patient in terms of their individual specialties and work together to develop goals that meet the patient’s needs. During the course of treatment, team meetings are held to evaluate progress and to modify the treatment plan, if necessary.

Activities of all kinds can be used for treatment purposes. When working with children, for example, occupational therapists often use toys. For adults, therapy may include anything from activities that strengthen muscles to using a computer. While some treatments may give the appearance of recreation, all have a serious purpose. Working in the kitchen may produce a cake, but the skills practiced include memory, sequencing, coordination, and safety precautions, which are important for independent living at home.

“Word find” games can help improve visual acuity and the ability to discern patterns. Computer programs have been designed to help patients improve *cognitive skills*, including decision making, abstract reasoning, and problem solving, and *perceptual skills*, such as peripheral vision and discrimination of letters, colors, and shapes. All of these treatments are designed to foster independence at home and at work.

During each therapy session, the therapist assesses the patient to determine the treatment’s effectiveness as well as the progress made toward meeting the treatment’s goals. These assessments are then a basis for modifying goals and therapeutic procedures. A person with short-term memory loss, for instance, might be encouraged to make lists to aid recall. One with coordination problems might be given tasks to improve eye–hand coordination.

In addition to helping individuals strengthen basic motor functions and reasoning abilities, occupational therapists help them master daily living skills. Helping individuals with severe disabilities learn to cope with seemingly ordinary tasks such as getting dressed, using a bathroom, or driving a car requires sensitivity as well as skill. Disability may be recently acquired, such as a spinal cord injury resulting from a traffic accident, or a chronic condition present at birth, such as cerebral palsy. Therapists provide individuals with *adaptive equipment* such as wheelchairs, splints, and aids for eating and dressing. They may design and make special equipment and recommend changes in the home or work environment to facilitate functioning.

Computer-aided adaptive equipment offers the prospect of independence to some people with severe disabilities. Occupational therapists often work with rehabilitation engineers to develop such special equipment. Examples are microprocessing devices that permit individuals with paraplegia and quadriplegia to operate wheelchairs and switches for household resources such as telephones, television sets, and radios. As such devices move out of the research and development stage, occupational therapists are involved in helping patients learn to use them.

An occupational therapist tends to work with a particular disability or age group. Approximately three out of five therapists work principally with persons who have physical disabilities; the rest work with those who have psychological, emotional, or developmental problems. A growing number of therapists are working in the wellness and health promotion areas. Often, the practice

setting determines the age level and treatment needs of a therapist's patients. In *home health care*, for instance, a growing number of referrals involve older individuals with conditions such as arthritis, cardiac problems, and hip and other fractures.

The goals of occupational therapy in public schools focus not on treatment or rehabilitation but on the resources that an individual child needs to participate effectively in the educational program. This may involve making an initial evaluation of a child's abilities and the implications for learning, recommending special therapeutic activities, consulting with parents and teachers, modifying classroom equipment or school facilities, and developing the functional, motor, and perceptual skills necessary for learning. Like teachers, these occupational therapists work regular school hours and participate in teachers' meetings and other activities.

Occupational therapists in mental health settings treat individuals with mental illness or emotional problems. Among the disorders and diseases often treated mainly as *emotional disorders*, occupational therapists encounter alcoholism, drug abuse, depression, eating disorders, and stress-related disorders. Therapists provide individual and group activities that simulate real-life experiences to help people learn to cope with the daily stresses of life and to manage their work and leisure more effectively. These activities include tasks that require planning and time-management skills, budgeting, shopping, meal preparation and homemaking, self-care, and using community resources such as public transportation and service agencies.

Keeping notes is an important part of an occupational therapist's job. Some of the records for which an occupational therapist may be responsible include an initial evaluation, progress notes, reports to the physician, special internal staff notes, Medicare records, and discharge notes. Careful and complete documentation is required for reimbursement by insurance companies and Medicare.

Besides working with patients, occupational therapists may supervise student therapists, occupational therapy assistants, volunteers, and auxiliary nursing workers. Chief occupational therapists in a hospital may teach medical and nursing students the principles of occupational therapy. Many therapists supervise occupational therapy departments, coordinate patients' activities, or act as consultants to public health departments and mental health agencies. Some teach or conduct research in colleges and universities.

Work Environment

Although occupational therapists generally work a standard 40-hour week, they may occasionally have to work evenings or weekends. Their work environment varies according to the setting and available facilities. In a large *rehabilitation center*, for example, the therapist may work in a spacious room with a variety of equipment. In a nursing home, the therapist may work in a kitchen when using food preparation as therapy. Wherever they work and whatever equipment they use, they generally have adequate lighting and ventilation. The job can be physically tiring because therapists are on their feet much of the time. Those providing home health care may spend several hours a day driving from appointment to appointment. Therapists also face hazards such as back-strain from lifting and moving patients and equipment.

Therapists are increasingly taking on supervisory roles. In an effort to curtail rising health care costs, third-party payers are beginning to encourage occupational therapy assistants and aides to take more hands-on responsibility. By having assistants and aides work more closely with clients under the guidance of a therapist, the cost of therapy should be more modest.

Employment Opportunities

According to the most recent data, occupational therapists held about 78,000 jobs, with about one in four working part-time and about 1 in 6 holding more than one job. The largest number of jobs were located in hospitals, including many in rehabilitation and psychiatric hospitals. Other major employers include offices and clinics of occupational therapists and other health practitioners, school systems, home health agencies, nursing homes, community mental health centers, adult day care programs, job training services, and residential care facilities.

Some occupational therapists are in private practice. Some are solo practitioners, whereas others work in multispecialty group practices or consulting firms. They typically see patients referred to them by physicians or other health professionals.

Private practitioners also provide occupational therapy services on a contract or consultant basis to industry as well as health facilities. Largely because of incentives in the health care financing system, much of the occupational therapy furnished in nursing

homes, adult day care programs, and home health agencies is provided by contract rather than by staff therapists.

Educational and Legal Requirements

A bachelor's degree in occupational therapy is the minimum requirement for entry into this field. All states, Puerto Rico, and the District of Columbia regulate occupational therapy. To obtain a license, applicants must graduate from an accredited educational program and pass a national certification examination. Those who pass the test are awarded the title of *registered occupational therapist (OTR)*.

In 1999, entry-level education was offered in 88 bachelor's degree programs; 11 post-bachelor's certificate programs for students with a degree other than one in occupational therapy; and 53 entry-level master's degree programs. Nineteen programs offered a combined bachelor's and master's degree, and two offered an entry-level doctoral degree. Most schools have full-time programs, although a growing number also offer weekend or part-time programs.

Coursework in occupational therapy programs includes physical, biological, and behavioral sciences and the application of occupational therapy theory and techniques. These programs also require students to successfully complete at least a six-month supervised clinical internship following the classroom component of their training.

Entry to educational programs is competitive, and applicants are screened carefully. Persons considering this profession should take high school courses in biology, chemistry, physics, health, art, and social sciences. College admissions offices also look favorably upon paid or volunteer experience in the health care field. In addition to the physical sciences, high school students interested in a career in occupational therapy should know that the program requires applicants to observe occupational therapists at work before they can be accepted as students. The exposure is designed to eliminate any misconceptions that a prospective student might have about the occupation. In choosing among applicants, many educational programs weigh heavily any previous job and volunteer experience in a health care setting. College students who con-

sider transferring from another academic discipline to an occupational therapy program in their sophomore or junior year need superior grades, because competition for entrance to programs is more intense after the freshman year.

Persons considering this career must be able to work with people of all ages, temperaments, and personalities. To gain patients' confidence, it is necessary to have a warm, friendly personality that inspires both trust and respect. It is also necessary to have ingenuity and imagination in adapting activities to individual needs. The potential therapist also needs to be skilled, patient, and resourceful in teaching, as patients may have difficult learning problems. Individuals working in home health care must be willing and able to travel and adapt to the variety of work settings one experiences when providing services in the home.

Newly graduated occupational therapists generally begin as staff therapists. Advancement is chiefly to supervisory or administrative positions; some therapists pursue advanced education to teach or conduct research.

Employment Trends

Most recently, occupational therapists held about 78,000 jobs. The largest number of jobs are in hospitals, including many in rehabilitation and psychiatric hospitals. School systems are the second largest employer of occupational therapists. Other major employers include offices of occupational therapists and other health practitioners, nursing homes, community mental health centers, adult day care programs, job training services, and residential care facilities.

Employment of occupational therapists is expected to increase faster than the average for all occupations through 2008. Federal legislation imposing limits on reimbursement for therapy services may adversely affect the job market for occupational therapists in the near term. Because of the effects of these provisions, the majority of expected employment growth for occupational therapists is expected to occur in the second half of the forecast period.

In the long run, the demand for occupational therapists should rise as a result of growth in the population having disabilities or limited function requiring therapy services. The baby boom

generation's movement into middle age, a period when the incidence of heart attack and stroke increases, will increase the demand for therapeutic services. The rapidly growing population 75 years of age and older (an age group that suffers from a high incidence of disabling conditions) will also demand additional services. Medical advances now enable more patients with critical problems to survive; these patients may need extensive therapy.

Hospitals will continue to employ a large number of occupational therapists to provide therapy services to acutely ill inpatients. Hospitals will also need occupational therapists to staff their outpatient rehabilitation programs.

Employment growth in schools will result from increases in the school-age population and the availability of more services for disabled students. Therapists will be needed to help children with disabilities prepare to enter special education programs.

Earnings

According to the most recent data, median annual earnings of occupational therapists were \$49,450. The middle 50 percent earned between \$40,460 and \$57,890 per year. The lowest 10 percent earned less than \$32,040 and the highest 10 percent earned more than \$70,810 per year. Median annual earnings in the industries employing the largest number of occupational therapists were as follows:

Nursing and personal care facilities	\$51,220
Hospitals	50,430
Offices of other health practitioners	49,520
Elementary and secondary schools	45,340

Related Occupations

Occupational therapists use specialized knowledge to help individuals return to their normal activities and achieve maximum independence. Other workers who perform similar duties include orthopedists, prosthetists, physical therapists, speech-language

pathologists and audiologists, rehabilitation counselors, recreational therapists, art therapists, music therapists, and dance therapists.

Additional Information

For more information on occupational therapy as a career and a list of education programs, send a self-addressed label and \$5.00 to:

- American Occupational Therapy Association, 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD 20824-1220. Internet: <http://www.aota.org>.

Occupational Therapy Assistants and Aides

Occupational therapy assistants and *aides* work under the direction of occupational therapists to provide rehabilitative services to patients suffering from mental, physical, emotional, or developmental impairments. The ultimate goal is to improve clients' quality of life by helping them compensate for limitations. For example, occupational therapy assistants help injured workers reenter the labor force by helping them improve their motor skills; alternatively, they may help persons with learning disabilities increase their independence by teaching them to prepare meals or use public transportation.

Occupational therapy assistants help clients with the rehabilitative activities and exercises that are outlined in the treatment plan devised by the occupational therapist. The activities range from teaching the patient the proper method of moving from a bed into a wheelchair to the best way to stretch and limber the muscles of the hand. Assistants monitor the individual to ensure the client is performing the activities correctly and to provide encouragement. They also record their observations with regard to the patient's progress for use by the occupational therapist. If the treatment is not having the intended effect or if the client is not improving as expected, the treatment program may be altered to obtain better results. Assistants also document billing of the patient's health insurance provider.

Occupational therapy aides typically prepare materials and assemble equipment used during treatment and are responsible for performing a range of clerical tasks. Their duties may include scheduling appointments, answering the telephone, restocking or ordering depleted supplies, and filling out insurance forms or other paperwork. Aides are not licensed, so by law they are not allowed to perform as wide a range of tasks as occupational therapy assistants do.

Work Environment

Occupational therapy assistants and aides usually work during the day, but they may occasionally work evenings or weekends to accommodate a client's schedule. These workers should be in good physical condition, because they are on their feet for long periods of time and may be asked to help lift and move clients or equipment.

Employment Opportunities

According to the latest data, occupational therapy assistants and aides held 25,000 jobs. Approximately 4 out of 10 assistants and aides worked in offices of occupational therapists; about 3 out of 10 worked in hospitals. The remainder worked primarily in nursing and personal care facilities, offices and clinics of physicians, social services agencies, outpatient rehabilitation centers, and home health agencies.

Educational and Legal Requirements

An individual must complete an associate's degree or certificate program from an accredited community college or technical school to qualify for an occupational therapy assistant job. In contrast, occupational therapy aides usually receive most of their training on the job.

There were 185 accredited occupational therapy assistant programs in the United States in 2000. The first year of study typically involves an introduction to health care and basic medical

terminology, anatomy, and physiology. In the second year, courses are more rigorous and usually include occupational theory courses in areas such as mental health, gerontology, and pediatrics. Students must also complete supervised fieldwork in a clinic. Applicants to occupational therapy assistant programs can improve their chances of admission by taking high school courses in biology and health and by performing volunteer work in nursing homes, occupational or physical therapist's offices, or elsewhere in the health care field.

Occupational therapy assistants are regulated in most states, and they must pass a national certification examination after they graduate. Those who pass the test are awarded the title of certified occupational therapy assistant.

Occupational therapy aides usually receive most of their training on the job. Applicants may increase their chances of getting a job by volunteering their services, thereby displaying initiative and aptitude to the employer.

Both assistants and aides must be responsible, patient, and willing to take directions and work as part of a team. Furthermore, they should be caring and want to help people who are not able to help themselves.

Employment Trends

Employment of occupational therapy assistants and aides is expected to grow much faster than the average for all occupations through 2008. Growth will result from an aging population, including the baby boom cohort, which will probably need substantial occupational therapy services. Demand will also be boosted by advances in medicine that allow more people with critical problems to survive and then enter into rehabilitative therapy.

Employment growth in this field would be even faster, except for federal legislation imposing limits on reimbursement for therapy services. At the same time, third-party payers, which are very concerned about rising health care costs, are beginning to encourage occupational therapists to delegate more of the hands-on therapy work to occupational therapy assistants and aides. By having assistants and aides work more closely with clients under the guidance of a therapist, the cost of therapy should be more modest than otherwise.

Earnings

According to the latest data, median annual earnings of occupational therapy assistants were \$34,340. The middle 50 percent earned between \$29,280 and \$40,690 per year. The lowest 10 percent earned less than \$23,970 and the highest 10 percent earned more than \$45,370 per year. Median annual earnings of occupational therapy assistants were \$33,390 in hospitals. Median annual earnings of occupational therapist aides were \$20,170. The middle 50 percent earned between \$16,510 and \$28,470. The lowest 10 percent earned less than \$14,370, and the highest 10 percent earned more than \$35,900.

Related Occupations

Occupational therapy assistants and aides work under the direction of occupational therapists. Other occupations in the health care field that work under the supervision of professionals include dental assistants, medical assistants, optometric assistants, pharmacy assistants, and physical therapy assistants and aides.

Additional Information

Information on a career as an occupational therapy assistant and a list of accredited programs can be obtained by sending a self-addressed label and \$5.00 to:

- American Occupational Therapy Association, 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD 20824-1220. Internet: <http://www.aota.org>.

Chapter 22



Additional Technologists, Technicians, and Assistants

Key Terms

Electroencephalography	Electrocardiograph (EKG/ECG) technician
Ambulatory monitoring	Holter monitoring
Evoked potential studies	Stress testing
Sleep studies	Nuclear medicine
Brain wave mapping	Radionuclides
Electroneurodiagnostic technologist (EEG technologist)	Radiopharmaceuticals
Artifact	Gamma scintillation camera
Neurology/neurophysiology	Operating room
Cardiology technologist	Surgical technologist
Vascular technologist	Medical assistant
Echocardiographer	Athletic trainer

This chapter is a compilation of health professions that, although related, do not fit neatly into the categories of professions previously described. While they are branches of other professions, they are distinct entities with different requirements. Because today's students have a wider choice of diverse health professions, these are presented for consideration within the health field. The first three professions (EEG, EKG, and nuclear medicine personnel) deal in special diagnostic technology; the next two (surgical technicians and medical assistants) assist physicians; and the last (athletic trainers) work on their own under a physician's supervision.

Electroneurodiagnostic Technologists

Work Description

Electroencephalography is a procedure that measures the electrical activity of the brain. An instrument called the electroencephalograph records this activity and produces a written tracing of the brain's electrical impulses. This record of brain waves, an electroencephalogram (EEG), can be taken while patients are at rest

or asleep, while they are subjected to stimuli such as loud sounds and blinking lights, or during periods of exaggerated breathing.

The so-called resting EEG is a basic diagnostic tool in the area of neurology. Neurologists use electroencephalograms to help diagnose the extent of injury for patients suspected of having brain tumors, strokes, metabolic thoracic disorders, or epilepsy; to measure the effects of infectious diseases on the brain; and to determine whether individuals with mental or behavioral problems have an organic impairment such as Alzheimer's disease. Surgeons use them to monitor the patient's condition during major surgery. EEGs are standard in intensive care units as well: Absence of electrical activity in the brain is a basis for determining that a patient is clinically dead, and EEGs are used to assess the prospects for recovery of patients in a coma.

More sophisticated equipment is used for special EEG procedures, including ambulatory monitoring, evoked potential studies, sleep studies, and brain wave mapping. Tests such as these improve the physician's ability to detect the underlying reasons for a wide variety of troubling conditions. *Ambulatory monitoring* is used to check the activity to the brain over a 24-hour period. Sometimes, in cases where patients experience dizzy spells or sudden blackouts, brain waves may appear perfectly normal until the onset of symptoms. By monitoring such patients for an extended period of time, there is a better chance of detecting abnormal brain wave patterns. *Evoked potential studies* aid in the evaluation of the visual, auditory, and other sensory systems of the body, and in the diagnosis of multiple sclerosis and carpal tunnel syndrome. *Sleep studies* have proved valuable in the treatment of sleep disorders, impotence, and, in some cases, hypertension. *Brain wave mapping* involves computer-generated images of brain function; it is simply an enhancement of the EEG, in which a color-coded picture or "map" shows the intensity of brain waves in different areas of the brain.

The people who operate electroencephalographs are called *EEG technologists*. With the introduction of additional tests and machines that measure the electrical activity of the brain, the new job title *electroneurodiagnostic technologist* is also being used.

The range of tests performed by electroneurodiagnostic technologists includes but is broader than those conducted by EEG technologists. Because it provides a more accurate description of work typically performed in the field, the title "electroneurodiagnostic technologist" generally has replaced that of "EEG technologist."

It is not just job titles that are changing with the development of new ways of monitoring and evaluating the functioning of the nervous system. Job duties and skill levels are changing as well. Proficiency in operating basic EEG equipment is becoming little more than the entry-level skill for jobs in this field; additional training is necessary for personnel who perform special EEG procedures.

Before electroneurodiagnostic technologists produce electroencephalograms, they take a short medical history and help the patient relax. Then they apply electrodes to designated spots on the patient's head and body and make sure that the instruments are working correctly. The technologist chooses the most appropriate combination of instrument controls and electrodes to produce the kind of record needed. Technologists must recognize and correct any artifacts that appear (an *artifact* is an electrical or mechanical wave that comes from somewhere other than the brain, such as eye movement or interference from electrical sources). Mechanical problems with the electroencephalograph are reported to the supervisor, so that the machine can be repaired promptly.

The first step in conducting a special procedure EEG is essentially the same as that for a resting EEG—attaching electrodes to the patient's body. However, electrodes for a resting EEG are secured at various places on the scalp, whereas a special procedure EEG may require that electrodes be secured on the chest, arm, leg, or spinal column as well, to record activity from both the central and peripheral nervous systems.

In ambulatory monitoring, activity of the heart as well as the brain may be monitored while the patient carries out normal activities over a 24-hour period. Once the monitoring time has elapsed, the technologist removes the small recorder fastened to the patient's side and feeds the recorded information into a special machine that transforms the digital recordings into hard copy (paper) EEG tapes. The technologist reviews the tapes, a process that can take several hours, selecting sections for the physician to examine. To determine which sections merit attention from the physician, the technologist must be able to distinguish between normal and abnormal brain wave patterns.

Whereas ambulatory EEGs measure general brain wave activity, evoked potential testing uses a special machine to measure sensory and physical responses to specific stimuli. After the electrodes have been attached properly, the technologist sets the machine for

the type and intensity of the stimulus. If there is no reaction, progressively stronger stimuli are applied until the patient reacts. Once there is a reaction, the sensation level is noted. Additional stimuli are applied until the technologist decides that an adequate reading has been taken. The technologist may spend from one to four hours with the patient to administer an evoked potential test.

Increasingly, technologists are being called upon to set up and monitor EEGs and evoked potential tests in the operating room. Surgical monitoring requires that technologists be well versed in anesthesia and its effect on brain waves, so that they can alert the surgical team when readings from the EEG instrument suggest an abnormal reaction.

Sleep studies and brain wave mapping are examples of other diagnostic procedures administered by specialized EEG personnel. Sleep studies require technologists to be competent in monitoring respiration and heart activity in addition to brain wave activity. Technologists must know the various stages of sleep, the average length of each stage, and the characteristic functioning of the neurologic and cardiopulmonary systems during each stage. When all the necessary readings have been taken, the technologist coordinates readings from the various organ systems, separating them according to the various stages of sleep, and relays them to the physician. Brain wave mapping requires the technologist to decide which sections of the EEG should be transformed into color-coded pictures of brain wave frequency and intensity, for subsequent examination by a physician.

Technologists must know how to recognize changes in the patient's neurologic, cardiac, and respiratory status. To react properly in an emergency, they must understand the kinds of medical emergencies that can occur while they are taking the EEG. For example, if a patient suffers an epileptic seizure in the EEG laboratory, the technologist must be prepared to take the proper action.

Electroneurodiagnostic technologists may have supervisory or administrative responsibilities. They may manage an electroneurodiagnostic laboratory, arrange work schedules, keep records, schedule appointments, order supplies, provide instruction to less experienced technologists, and take responsibility for the equipment's upkeep.

In some hospitals, job duties are not confined to electroencephalography. Electroneurodiagnostic technologists may perform EKGs and other kinds of procedures as well. To acquire the requisite skills, technologists are cross-trained to handle several different

machines. A new trend in hospital staffing, the cross-training of “multicompetent” technicians, is seen as a way of holding down labor costs.

Work Environment

Electroneurodiagnostic technologists usually work in clean, well-lighted surroundings, and they spend about half of their time on their feet. A lot of bending is necessary, especially if they work with patients who are unruly or very ill and require assistance.

A five-day, 40-hour workweek with some overtime is normal, although some hospitals require EEG technologists to be “on call” (ready to report to work at a moment’s notice) after hours and on weekends and holidays. These employees generally work during the day, but those involved in sleep studies may work evenings and nights.

Employment Opportunities

Electroneurodiagnostic technologists held nearly 167,000 jobs in 1998. Most jobs are in hospitals, but other health care settings are gaining in importance. Technologists work in neurology laboratories, offices of neurologists and neurosurgeons, group medical practices, HMOs, urgent care centers and clinics, and psychiatric facilities. Most technologists work full-time.

Educational and Legal Requirements

Although electroneurodiagnostic technologists generally learn their skills on the job, employers favor formal training programs. Applicants for trainee positions in hospitals need a high school diploma. Often, EEG trainees transfer to the neurology department from other jobs in the hospital, such as laboratory aide or licensed practical nurse.

Formal training is offered at the postsecondary level by hospitals, medical centers, community colleges, vocational-technical institutes, and colleges and universities. At one point, the Joint

Review Committee on Education in Electroneurodiagnostic Technology had approved 14 formal training programs. Programs usually last from one to two years and include laboratory experience as well as classroom instruction in *neurology*, anatomy, neuroanatomy, physiology, *neurophysiology*, clinical and internal medicine, psychiatry, and electronics and instrumentation. Graduates receive associate's degrees or certificates.

Credentials for EEG personnel are available through the American Board of Registration of Electroencephalographic and Evoked Potential Technologists, which awards the title Registered EEG Technologist to qualified applicants and accredits technologists in the subspecialty of evoked potential as Registered Evoked Potential Technologist. Although not generally required for entry-level jobs, registration indicates professional competence and may be necessary for supervisory or teaching jobs.

Persons who want to enter this field should have manual dexterity, good vision, an aptitude for working with electronic equipment, and the ability to work with patients as well as with other health personnel. High school students considering a career in this occupation should take courses in health, biology, human anatomy, and mathematics.

Electroneurodiagnostic personnel in large hospitals can advance to chief or manager, and take on increased responsibilities in laboratory management and in teaching basic techniques to new personnel or students from EEG training programs. Chief technologists generally are supervised by a physician—an electroencephalographer, neurologist, or neurosurgeon.

Employment Trends

Employment of EEG technologists is expected to grow much faster than the average for all occupations through the year 2008, chiefly because of increasing application of the EEG and related neurodiagnostic tests, and the willingness of health insurers and other third-party payers to cover such examinations. Nonetheless, most job openings will result from the need to replace workers who transfer to other occupations or leave the labor force entirely.

Continued acceptance of the value of the EEG is expected to sustain demand for workers to perform these tests. Moreover, further advances in clinical neurophysiology are a virtual certainty,

and these are likely to spur demand by expanding the uses of neurodiagnostic testing.

The rate at which this field expands will also be governed by the willingness of third-party payers to pay for neurological testing. EEG laboratories, which offer both outpatient and inpatient testing, have become revenue centers for hospitals because outpatient services are currently fully reimbursed. Some hospitals have expanded their EEG laboratories, adding space and hiring additional personnel. Nonhospital providers have responded to incentives in the reimbursement system as well, expanding the range of EEG procedures they offer and creating more jobs for EEG technologists.

Because job growth through the year 2008 is expected to be very rapid in outpatient settings, including offices of neurologists, medical group practices, and HMOs, opportunities are likely to be especially favorable in those settings. Opportunities for individuals who have a background in EEG technology will be excellent.

Earnings

Most recently, starting salaries of EEG technologists employed by hospitals, medical schools, and medical centers averaged \$35,770 per year in 1998. Positions such as EEG laboratory supervisor, special procedures instructor, or EEG training program director generally command higher salaries.

Electroneurodiagnostic technologists in hospitals receive the same benefits as other hospital personnel, including paid vacations, sick leave, health insurance, and pensions. Some institutions provide tuition assistance, uniforms, parking, child care, and other employee benefits.

Related Occupations

Related occupations in supervised health care activities include audiometrist, electrocardiograph technician, clinical laboratory technician, occupational therapy assistant, surgical technician, physical therapy aide, and psychiatric aide.

Additional Information

Local hospitals can supply information about employment opportunities.

For general information about a career in electroencephalography as well as a list of accredited training programs, contact:

- Executive Office, American Society of Electroneurodiagnostic Technologists, Inc., 204 W. 7th St., Carroll, IA 51401.

Information about specific accredited training programs is also available from:

- Joint Review Committee on Electroneurodiagnostic Technology, Rt. 1, Box 63A, Genoa, WI 54632.

Information on becoming a registered EEG or evoked potential technologist is available from:

- American Board of Registration of Electroencephalographic and Evoked Potential Technologists, P.O. Box 916633, Longwood, FL 32791-6633.

Cardiovascular Technologists and Technicians

Work Description

Cardiovascular technologists and technicians assist physicians in diagnosing and treating cardiac (heart) and peripheral vascular (blood vessel) ailments.

Cardiovascular technologists specializing in cardiac catheterization procedures are called *cardiology technologists*. They assist physicians with invasive procedures in which a small tube, or catheter, is wound through a patient's blood vessel from a spot on the patient's leg into the heart. This procedure is done to determine if a blockage exists and for other diagnostic purposes. In balloon angioplasty, a procedure used to treat blockages of blood vessels, technologists assist physicians who insert a catheter with a balloon on its end that reaches the point of obstruction.

Technologists prepare patients for these procedures by first positioning them on an examining table and then shaving, cleaning, and administering anesthesia to the top of the patient's leg

near the groin. During the procedures, they monitor patients' blood pressure and heart rate using electrocardiogram (EKG) equipment and notify the physician if something appears to be wrong. Technologists may also prepare and monitor patients during open-heart surgery and the implantation of pacemakers.

Cardiovascular technologists and technicians may specialize in noninvasive peripheral vascular tests. Those who assist physicians in the diagnosis of disorders affecting circulation are known as *vascular technologists*. Vascular technologists use ultrasound instrumentation, such as Doppler ultrasound, to noninvasively record vascular information, such as blood pressure, limb volume changes, oxygen saturation, cerebral circulation, peripheral circulation, and abdominal circulation. Many of these tests are performed during or immediately after surgery. Technologists and technicians who use ultrasound on the heart are referred to as *echocardiographers*. They work with equipment that transmits sound waves and then collects the echoes to form an image on a screen.

Cardiovascular technicians who obtain electrocardiograms are known as *electrocardiograph* (abbreviated *EKG* or *ECG*) *technicians*. To take a basic EKG, which traces electrical impulses transmitted by the heart, technicians attach electrodes to the patient's chest, arms, and legs; they then manipulate switches on an electrocardiograph machine to obtain a reading. This test is performed before most kinds of surgery and as part of a routine physical examination, especially for persons who have reached middle age or who have a history of cardiovascular problems.

EKG technicians with advanced training perform *Holter monitoring* and *stress testing*. For a Holter monitoring, technicians place electrodes on the patient's chest and attach a portable EKG monitor to his or her belt. Following 24 to 48 hours of normal routine for the patient, the technician removes a cassette tape from the monitor and places it in a scanner. After checking the quality of the recorded impulses on an electronic screen, the technician prints the information from the tape, so that a physician can interpret it later. The printed output from the scanner is eventually used by a physician to diagnose heart ailments.

For a treadmill stress test, EKG technicians document the patient's medical history, explain the procedure, connect the patient to an EKG monitor, and obtain a baseline reading and resting blood pressure. Next, they monitor the heart's performance while the patient is walking on a treadmill, gradually

increasing the treadmill's speed to observe the effect of the increased exertion. Those cardiovascular technicians who perform EKG and stress tests are known as "noninvasive" technicians, because the techniques they use do not require the insertion of probes or other instruments into the patient's body.

Some cardiovascular technologists and technicians also schedule appointments, type doctor interpretations, maintain patient files, and care for equipment.

Work Environment

Technologists and technicians generally work a 5-day, 40-hour week that may include working on weekends. Those in catheterization laboratories tend to work longer hours and may work evenings. They may also be on call during the night and on weekends.

Cardiovascular technologists and technicians spend much of their time walking and standing. Those who work in catheterization laboratories may face stressful working conditions, because they are in close contact with patients who have serious heart ailments. Some patients, for example, may encounter complications from time to time that have life or death implications.

Employment Opportunities

According to the most recent statistics, cardiovascular technologists and technicians held about 39,000 jobs. Most worked in cardiology departments of large hospitals. Others worked in cardiologists' offices, cardiac rehabilitation centers, HMOs, or clinics. Approximately one-third were EKG technicians.

Educational and Legal Requirements

Although some cardiovascular technologists, vascular technologists, and echocardiographers are currently trained on the job, an increasing number have received their training in two- to four-year programs. Cardiology technologists normally complete a two-year junior or community college program. One year is dedicated to

core courses, followed by a year of specialized instruction in either invasive, noninvasive, or noninvasive peripheral cardiology. Those who are qualified in a related allied health profession need to complete only the year of specialized instruction. Graduates from programs accredited by the Joint Review Committee on Education in Cardiovascular Technology are eligible to register as professional technologists with the American Registry of Diagnostic Medical Sonographers or Cardiovascular Credentialing International.

For basic EKGs, Holter monitoring, and stress testing, one-year certificate programs exist. Nevertheless, most EKG technicians are still trained on the job by an EKG supervisor or a cardiologist. On-the-job training usually lasts about 8 to 16 weeks. Most employers prefer to train people already in the health care field—nursing aides, for example. Some EKG technicians are students enrolled in two-year programs to become technologists, working part-time to gain experience and make contact with employers.

Cardiovascular technologists and technicians must be reliable, have mechanical aptitude, and be able to follow detailed instructions. A pleasant, relaxed manner for putting patients at ease is an asset.

Employment Trends

Employment of cardiovascular technologists and technicians is expected to grow as fast as the average for all occupations through 2008. During this time span, technologists and technicians will experience different patterns of employment change, however.

Employment of cardiology technologists is expected to grow much faster than the average for all occupations. Growth will occur as the population ages, because older people have a higher incidence of heart problems. Likewise, employment of vascular technologists will grow faster than the average, as advances in vascular technology reduce the need for more costly and invasive procedures.

In contrast, employment of EKG technicians is expected to decline, as hospitals train nursing aides and others to perform basic EKG procedures. Individuals trained in Holter monitoring and stress testing are expected to have more favorable job prospects than those who can perform only a basic EKG.

Some job openings for cardiovascular technologists and technicians will arise from replacement needs, as individuals transfer to

other jobs or leave the labor force. Relatively few job openings are expected, however, because the occupation is small.

Earnings

According to the most recent data, median annual earnings of cardiovascular technologists and technicians were \$33,350. The middle 50 percent earned between \$24,590 and \$43,450. The lowest 10 percent earned less than \$19,540, and the highest 10 percent earned more than \$52,930. Median annual earnings of cardiovascular technologists and technicians were \$33,100 in offices and clinics of medical doctors and \$32,860 in hospitals.

Related Occupations

Cardiovascular technologists and technicians operate sophisticated equipment that helps physicians and other health practitioners diagnose and treat patients. In that respect, their work is similar to that of nuclear medicine technologists, radiologic technologists, diagnostic medical sonographers, electroneurodiagnostic technologists, perfusionists, radiation therapists, and respiratory therapists.

Additional Information

For general information about a career in cardiovascular technology contact:

- Alliance of Cardiovascular Professionals, 910 Charles St., Fredericksburg, VA 22401.

For a list of accredited programs in cardiovascular technology, contact:

- Joint Review Committee on Education in Cardiovascular Technology, 3525 Ellicott Mills Dr., Suite N, Ellicott City, MD 21043-4547.

For information on vascular technology, contact:

- Society of Vascular Technology, 4601 Presidents Dr., Suite 260, Lanham, MD 20706-4365.

For information on echocardiography, contact:

- American Society of Echocardiography, 4101 Lake Boone Trail, Suite 201, Raleigh, NC 27607.

For information regarding registration and certification, contact:

- Cardiovascular Credentialing International, 4456 Corporation Lane, Suite 110, Virginia Beach, VA 23462.
- American Registry of Diagnostic Medical Sonographers, 600 Jefferson Plaza, Suite 360, Rockville, MD 20852-1150.

Nuclear Medicine Technologists

Work Description

Nuclear medicine is the branch of radiology that uses *radionuclides*—unstable atoms that emit radiation spontaneously—in the diagnosis and treatment of disease. Just as the field of radiology had its beginnings when Wilhelm Roentgen discovered the x ray, the seed for nuclear medicine was planted almost a century ago when Marie Curie discovered radium. However, it was not until after World War II and the discovery of ways to produce artificial radionuclides that doctors began to recognize the medical uses of these elements. When a radionuclide is injected into a patient or taken orally, radioactivity can be detected and monitored from outside to assess the characteristics or functioning of those tissues or organs in which it settles. Abnormal areas show up as higher or lower than normal concentrations of radioactivity.

Nuclides capable of producing useful information about thyroid function were among the first medical uses discovered. Since then, diagnostic applications of nuclear medicine have expanded dramatically, with images of bones, brain, liver, or heart function emerging as particularly important. A new application of nuclear medicine is to screen for breast cancer. Nuclear medicine today commands a place alongside other highly valued diagnostic disciplines. As is generally the case in medical diagnostics, specially trained technologists perform the tests and procedures ordered by physicians, who then interpret the results.

Nuclear medicine technologists are trained to assume responsibility for the proper use of *radiopharmaceuticals* (radioactive drugs) in a variety of functional areas. They may conduct laboratory studies, do research, or develop and administer procedures for purchasing, using, and disposing of radioactive nuclides. Implementing safety procedures required by the Nuclear Regulatory Commission is another important role. Most of the time, however, technologists work directly with patients, performing nuclear medicine procedures to diagnose or treat disease.

Nuclear medicine technologists, like radiologic technologists, operate diagnostic imaging equipment. However, the equipment used in these two specialties is based on different principles, and job duties reflect this divergence. Radiologic technologists create an image by shooting a beam of radiation through the patient. In nuclear medicine, the technologist prepares a radioactive substance (radiopharmaceutical) for the patient to take, administers it, and then operates a camera that uses the radiation given off by the patient to create an image.

Preparing the radioactive substance that the patient is given before the image is taken is a task that requires laboratory skills as well as strict adherence to safety precautions, inasmuch as the technologist is handling dangerous radioactive materials.

Prior to the examination, the technologist explains the test procedure and tries to relieve any anxiety the patient may feel. The amount and type of radiopharmaceutical that is used depend on the particular test being performed. The nuclear medicine technologist first calculates and prepares the correct dosage and then administers it to the patient by mouth, injection, or other means. Afterward, the technologist observes the patient carefully to make sure that no unanticipated reaction occurs.

Once the nuclide has had time to enter the system, the technologist is ready to perform the imaging procedure. The technologist positions the patient and then starts the *gamma scintillation camera*, or scanner, as these instruments are popularly called, which takes pictures of the radioisotopes as they pass through or localize in different parts of the patient's body. Once the scan has been completed, the technologist views these images on a computer screen or on film. The technologist carefully examines the quality of the image for any additional information to give the

physician. Some studies, such as cardiac function studies, are then processed by the technologist with the aid of a computer. Information obtained through the nuclear medicine procedure is used by the patient's doctor in arriving at a diagnosis.

In some facilities, nuclear medicine technologists perform imaging procedures in other subspecialties of radiology. Technologists may spend part of the day in the ultrasound or diagnostic radiology departments, performing ultrasound scans, fluoroscopy, or routine x rays. The amount of time spent on non-nuclear medicine procedures depends on the size of facility, the amount of specialization, and the organizational policy of the institution.

The job of the nuclear medicine technologist encompasses more than diagnostic imaging. Because nuclear medicine is effective in certain laboratory tests, technologists must be proficient in clinical laboratory procedures. Nuclear medicine technologists perform clinical laboratory procedures called radioimmunoassay studies, instead of or in addition to a diagnostic image, to assess the behavior of the radioactive substance inside the body. For example, radioactive substances are added to blood or serum in a test tube to determine levels of hormones or therapeutic drugs.

Other job responsibilities include ensuring that radiation safety procedures are carefully followed by all workers in the nuclear medicine laboratory and that complete and accurate records are kept. This information includes patient medical records, patient procedures performed, and amounts and types of radionuclides received, used, and disposed of.

Work Environment

Nuclear medicine technologists generally work a 40-hour week. This period may include evening or weekend hours in hospital departments that operate on an extended schedule. In addition, technologists in hospitals are required to perform on-call duty on a rotation basis. Depending on the size of the nuclear medicine department and number of technologists employed, the frequency of required on-call duty varies. The number of times a technologist is actually called into the hospital while on call also depends on the size and case mix of the hospital. Opportunities for weekend, part-time, and shift work are available as well.

Technologists are on their feet much of the day, and they may be required to lift or turn disabled patients. Physical stamina therefore is important.

There are radiation hazards in this field, although they have been minimized by the use of safety devices such as instruments that measure radiation exposure, shielded syringes, gloves, and other protective devices. Because of the presence of radiation and radioactive materials, technologists wear special badges that measure radiation levels while they are in the radiation area. The badge measurement rarely approaches or exceeds established safety levels because of safety programs and built-in safety devices.

Employment Opportunities

Most recently, nuclear medicine technologists held 18,000 jobs. About 7 out of 10 were hospital jobs. The rest were located in medical laboratories, physicians' offices, and outpatient clinics and imaging centers.

Educational and Legal Requirements

Nuclear medicine technology programs range in length from one to four years and may lead to a certificate, associate's degree, or bachelor's degree. Generally, certificate programs are offered in hospitals; associate programs in community colleges; and baccalaureate programs in four-year colleges and in universities. Courses cover physical sciences, the biological effects of radiation exposure, radiation protection and procedures, radiopharmaceuticals and their use, patients, imaging techniques, and computer applications. Associate's and bachelor's programs also cover liberal arts.

Certificate programs in nuclear medicine technology enroll individuals from a variety of backgrounds. These programs are designed for individuals who already have some postsecondary education—whether in radiologic technology, another allied health profession, or another health- or science-related area. Among those attracted to certificate programs are radiologic technologists and ultrasound technologists who seek to enhance their

skills, as well as medical technologists, registered nurses, respiratory therapists, and other health professionals who wish to change fields or specialize. Individuals with three to four years of college education may also choose certificate training as a means of preparing for a career in nuclear medicine technology. People not already trained in one of the health occupations have three options: a two-year certificate program, a two-year associate program, or four-year baccalaureate program.

The Joint Review Committee on Educational Programs in Nuclear Medicine Technology accredits most formal training programs in nuclear medicine technology. In 1999, there were 96 accredited programs.

Nuclear medicine technologist is among the occupations covered by the Consumer Patient Radiation Health and Safety Act of 1981, which aims to protect the public from the hazards of unnecessary exposure to medical and dental radiation by making sure that personnel involved in administering radioactive drugs or operating radiologic equipment are properly trained. The act requires the federal government to set standards that the states, in turn, may use for accrediting training programs or certifying individuals who use radioactive elements or radiation in medicine or dentistry.

Procedures for acquiring professional credentials in nuclear medicine technology include licensure—required by law in half of the states and Puerto Rico—and certification or registration, which is voluntary. Registration or certification is available from the American Registry of Radiologic Technologists (ARRT) and from the Nuclear Medicine Technology Certification Board (NMTCB). Credentials from either of these accrediting bodies qualify applicants for employment in the hospital setting.

Career lines in this field are short. Advancement usually involves promotion to a supervisory position, such as chief technologist or department administrator or manager. Specialization in a clinical area such as cardiology diagnostics or computer analysis offers another route for advancement. Some technologists progress by becoming instructors or directors in nuclear medicine technology programs, a step that usually requires a master's or bachelor's degree in nuclear medicine technology. Some technologists leave the occupation to take jobs as sales or training representatives with health industry equipment manufac-

turing firms, positions that build upon their background and experience.

Employment Trends

Employment of nuclear medicine technologists is expected to grow as fast as the average for all occupations through the year 2008. Substantial growth in the number of middle-aged and older persons will spur demand for diagnostic procedures, including nuclear medicine tests. Nuclear medicine is especially beneficial for bone, heart, and brain scans.

Conflicting forces will shape the job outlook. On the one hand, employment growth is likely to be constrained by competition from less invasive imaging methods—computed tomography (CT) and magnetic resonance imaging (MRI) in particular. Developments in diagnostic imaging technology are occurring at a dramatic pace, and it is likely that some of the tests that emerge will replace procedures currently performed by nuclear medicine technologists.

At the same time, advances in medical diagnostics could spur use of nuclear medicine procedures. The use of radiopharmaceuticals in combination with monoclonal antibodies is just one illustration of the enormous diagnostic potential of nuclear medicine. Monoclonal antibodies have an affinity for tumors. When radioactively marked, they are easily followed by scanning equipment as they gather around otherwise invisible parts of the body. They can be used to detect cancer at far earlier stages than is customary today, and without resorting to surgery. Another example involves the use of nuclear medicine diagnostics in cardiology. Using radionuclides injected into the bloodstream, nuclear medicine technologists can measure the percentage of the patient's blood pumped by each contraction of the heart. This procedure, when performed at rest and during stress, examines the heart's ability to meet the body's needs. In some patients, such a test eliminates the need for cardiac catheterization, a costly and at times risky procedure.

In the years ahead, job opportunities for nuclear medicine technologists in offices of physicians, medical laboratories, and outpatient imaging centers are expected to expand substantially. Hospitals, however, will continue to be the major employer of these workers. Hospitals, which face considerable pressure to keep

costs under control, are trying to reduce the number of tests per patient and to discourage procedures that mean revenue losses. Together with competition from other imaging methods, this effort could curtail expansion of nuclear medicine testing, although it is not at all certain that this will be the case.

Employment opportunities for trained nuclear medicine technologists vary regionally. Competition appears to be fairly keen in large metropolitan areas, while hospitals and other employers are actively recruiting technologists in rural areas.

Earnings

According to the latest statistics, nuclear medicine technologists earned an average salary of \$44,130 per year. Experienced technologists and those employed as chief technologists earned approximately \$12,000 more per year.

Related Occupations

Nuclear medicine technologists operate sophisticated equipment to help physicians and other health practitioners diagnose and treat patients. Workers in related occupations include radiologic technologists, ultrasound technologists, cardiology technologists, electrocardiograph technicians, electroneurodiagnostic technologists, clinical laboratory technologists, perfusionists, respiratory therapists, and radiation therapists.

Additional Information

Additional information on a career as a nuclear medicine technologist is available from:

- Society of Nuclear Medicine—Technologist Section, 1815 Samuel Morse Dr., Reston, VA 22090.
- American Society of Radiologic Technologists, Customer Service Department, 15000 Central Ave. S.E., Albuquerque, NM 87123-3917, (800) 444-2778.

For a list of accredited programs in nuclear medicine technology, write to:

- Joint Review Committee on Educational Programs in Nuclear Medicine Technology, PMB418 2nd Ave. E., Suite C, Poison, MT 59860-2107.

Information on certification is available from:

- Nuclear Medicine Technology Certification Board, 2970 Clairmont Rd., Suite 610, Atlanta, GA 30329.

Surgical Technologists

Work Description

The term *operating room* conjures up the image of two principal characters: the surgeon and the patient. Most operations involve more people, however, and during a major procedure such as open-heart surgery, the operating room may be crowded with as many as 20 doctors, nurses, and technicians. Among these personnel are surgical or operating room technologists.

Surgical technologists work with, and under the supervision of, surgeons, registered nurses, or other surgical personnel. They help set up the operating room with surgical instruments, equipment, sterile linens, and sterile fluids such as saline (a salt solution) or glucose (a sugar solution). They assemble, adjust, and check nonsterile equipment to ensure that it is working properly. Surgical technologists also may prepare patients for surgery by washing, shaving, and disinfecting incision sites where the surgeon will operate. They transport patients to the operating room and help drape them and position them on the operating table. Technologists also observe patients' vital signs, check charts, and help the surgical team scrub and put on gloves, gowns, and masks.

During surgery, technologists pass instruments and other sterile supplies to the surgeons and the surgeons' assistants. They hold retractors, cut sutures, and help count the sponges, needles, supplies, and instruments used during the operation. Surgical technologists help prepare, care for, and dispose of specimens taken for

laboratory analysis, and they may help apply dressings. Some operate sterilizers, lights, or suction machines and help operate diagnostic equipment. Technologists may also maintain supplies of fluids, such as plasma and blood.

After the operation, surgical technologists may help transfer patients to the recovery room and assist nurses in cleaning and stocking the operating room for the next operation.

Work Environment

Surgical technologists work in clean, well-lighted, cool environments. They need stamina to be on their feet the whole time they are on duty and must pay close attention to detail during operations. At times, they may be exposed to communicable diseases and unpleasant sights, odors, and materials.

Most surgery is performed during the day, but some workplaces, such as emergency surgical units, require 24-hour coverage. A 40-hour, five-day workweek is normal for surgical technologists, although many are required at times to be on call (available to work on short notice for emergencies) or to work nights, weekends, and holidays on a rotating basis.

Employment Opportunities

Most recently, surgical technologists held about 71,000 jobs. In some regions of the country, technologists known as “private scrubs” are employed directly by surgeons, who have special surgical teams, such as those for liver transplants. Most, however, are employed by hospitals and other places that have operating room, delivery room, and emergency room facilities.

Educational and Legal Requirements

Surgical technologists receive their training in formal programs offered by community and junior colleges, vocational schools, universities, hospitals, and the military. In 2001, the Commission on Accreditation of Allied Health Education Programs (CAAHEP)

recognized 350 accredited programs. High school graduation normally is required for admission. Programs last 9 to 24 months and lead to a certificate, diploma, or associate's degree. Shorter programs are designed for students who are already licensed practical nurses or military personnel with the appropriate training.

Accredited programs provide classroom education as well as supervised clinical experience. Required courses include anatomy, physiology, microbiology, pharmacology, professional ethics, and medical terminology. Other courses cover such topics as the care and safety of patients during surgery, proper use of aseptic techniques, and surgical care procedures. Students also learn how to sterilize instruments, prevent and control infection, and handle special drugs, solutions, supplies, and equipment.

Technologists may obtain voluntary professional certification from the Liaison Council on Certification for the Surgical Technologist by graduating from a formal program and passing a national certification examination. They may then use the designation Certified Surgical Technologist (CST). Continuing education or reexamination is required to maintain certification, which must be renewed every six years. Graduation from a CAAHEP-accredited program became a prerequisite for certification in March 2000. Most employers prefer to hire certified technologists.

Some surgical technologists are trained in the armed forces. Regardless of where they are educated and trained, surgical technologists are expected to keep abreast of new developments in the field. With additional training, they can work with new equipment such as is used in open-heart surgery.

Manual dexterity is a necessity for surgical technologists because they must handle instruments quickly, often having to anticipate which instrument is needed. They must be conscientious, orderly, and emotionally stable. In surgery there is little margin for error. High school students interested in careers in this occupation are advised to take courses in health, biology, chemistry, and math.

Technologists advance by specializing in one area of surgery, such as neurosurgery or open-heart surgery. They may also work as circulating technologists. A circulating technologist is the "unsterile" member of the surgical team who prepares patients; helps with anesthesia; gets, opens, and holds packages for the "sterile" persons during the procedure; interviews the patient

before surgery; keeps a written account of the surgical procedure; and answers the surgeon's questions about the patient during the surgery. With additional training, some technologists advance to first assistants, who help with retracting, sponging, suturing, cauterizing bleeders, and closing and treating wounds. Some surgical technologists manage central supply departments in hospitals, or take positions with insurance companies, sterile supply services, and operating equipment firms.

Employment Trends

Employment of surgical technologists is expected to grow much faster than the average for all occupations through the year 2008, as the volume of surgery increases and operating room staffing patterns change.

The number of surgical procedures is expected to rise as the population grows and ages. Older people require more surgical procedures. Technological advances, such as fiber optics and laser technology, will also permit new surgical procedures to be performed.

Operating room staffing patterns are also changing. Some employers are substituting technologists for operating room nurses to reduce costs. However, some facilities and states limit the work that surgical technologists can do, so they will never totally replace operating room nurses.

In addition, surgical practice patterns are changing; the dominant trend is a shift to outpatient or ambulatory surgery. Advances in anesthesia, fiber optics, and laser technology have made it possible for many procedures to be performed on an outpatient basis, and cost-control considerations furnish a powerful stimulus for choosing outpatient rather than inpatient surgery. Some health insurance plans cover the full cost of outpatient surgery but pay only part of the cost if the same procedure entails a hospital stay.

The growing popularity of outpatient surgery is especially evident in the hospital sector. Explosive growth is occurring in the number of surgical procedures performed in hospital outpatient departments, which employ surgical technologists as assistants. If hospitals continue to dominate the rapidly expanding outpatient surgery market, demand for surgical technologists is likely to remain strong. If, on the other hand, a significant volume of ambulatory surgery shifts to physicians' offices, clinics, and free-

standing “surgicenters,” job growth could be curtailed; relatively few surgical technologists are employed in these settings.

It is possible that demand for surgical technologists will be constrained by changes in staffing patterns as hospitals experiment with different patterns and methods of holding down labor costs. For example, hospitals may try to make greater use of multicompetent staff, who have the training to perform a wide variety of tasks. In the operating room, this trend could mean more jobs for nurses (provided that surgical nurses are readily available) and fewer positions for surgical technologists. Whether such staffing patterns will take hold on a wide scale is difficult to predict.

Because so many factors are at work, the job market for surgical technologists varies from one community to another, depending on local hiring needs and the supply of qualified applicants.

Employment prospects for top graduates of accredited programs in surgical technology are expected to be very good overall. Employers tend to view graduates of accredited training programs more favorably than those without such preparation—with the important exception of applicants with very strong clinical backgrounds such as foreign medical school graduates who have not yet passed the licensing examination that is necessary to enter residency training.

Earnings

According to the most recent data, the median salary for surgical technologists was \$29,020 per year. Salaries vary widely by geographic location, with those on the East and West Coasts generally being higher. Surgical technologists employed by surgeons tend to earn more than those employed by hospitals and similar institutions.

Related Occupations

Other health occupations requiring approximately one year of training after high school include license practical nurses, certified respiratory therapists, medical laboratory assistants, medical assistants, dental assistants, optometric assistants, and physical therapy aides.

Additional Information

For additional information on a career as a surgical technologist and a list of CAAHEP-accredited programs, contact:

- Association of Surgical Technologists, 7108-C South Alton Way, Englewood, CO 80112. Internet: <http://www.ast.org>.

For information on certification, contact:

- Liaison Council on Certification for the Surgical Technologist, 7790 East Arapahoe Rd., Suite 240, Englewood, CO 80112-1274.

Medical Assistants

Work Description

Medical assistants help physicians examine and treat patients and perform routine tasks to keep offices of physicians, podiatrists, chiropractors, and optometrists running smoothly. Medical assistants should not be confused with physician assistants, who examine, diagnose, and treat patients, under the direct supervision of a physician.

The duties of medical assistants vary from office to office, depending on the location and size of the practice and the specialty. In small practices, medical assistants are usually generalists, handling both clerical and clinical duties and reporting directly to the office manager or physician. Those in large practices tend to specialize in a particular area under the supervision of departmental administrators.

Medical assistants perform many administrative duties. They answer telephones, greet patients, update and file patients' medical records, fill out insurance forms, handle correspondence, schedule appointments, arrange for hospital admission and laboratory services, and handle billing and bookkeeping.

Clinical duties vary according to state law and include taking and recording vital signs and medical histories; explaining treatment procedures to patients; preparing patients for examination; and assisting during the examination. Medical assistants collect and prepare laboratory specimens or perform basic laboratory tests

on the premises; dispose of contaminated supplies; and sterilize medical instruments. They instruct patients about medication and special diets, prepare and administer medications as directed by a physician, authorize drug refills as directed, telephone prescriptions to a pharmacy, draw blood, prepare patients for x rays, take EKGs, remove sutures, and change dressings.

Medical assistants may also arrange examining room instruments and equipment, purchase and maintain supplies and equipment, and keep waiting and examining rooms neat and clean.

Assistants who specialize have additional duties. Podiatric medical assistants make castings of feet, expose and develop x rays, and assist podiatrists at surgery. Ophthalmic medical assistants help ophthalmologists provide medical eye care. They use precision instruments to administer diagnostic tests, measure and record vision, and test the functioning of eyes and eye muscles. They also show patients how to use eye dressings, protective shields, and safety glasses and to insert, remove, and care for contact lenses. Under the direction of the physician, they may administer medications, including eyedrops. They also maintain optical and surgical instruments and assist the ophthalmologist in surgery.

Work Environment

Medical assistants are usually employed in physicians' offices where they work in pleasant, well-lighted surroundings. They constantly interact with people and may have to handle several responsibilities at once.

Most full-time medical assistants work a regular 40-hour week. Some work evenings and weekends. They might have evening hours if the physician does. Their responsibilities and hours vary depending on whether they work in a clinic, hospital, large group practice, or private office.

Employment Opportunities

Most recently, medical assistants held about 329,000 jobs. Three out of five were employed in physicians' offices, and about one in five worked in offices of other health practitioners such as chiropractors, optometrists, and podiatrists. The rest worked in hospitals, nursing homes, and other health care facilities.

With a demand from more than 200,000 physicians, there are and will probably continue to be almost unlimited opportunities for formally educated medical assistants. Physicians in private practice employ more medical assistants than any other type of allied health personnel. The type of administrative and clinical tasks they perform facilitates the work of the physician, and qualified assistants are always in demand.

Educational and Legal Requirements

Although education in medical assisting is available at both the secondary and postsecondary levels, such training—while generally preferred—is not always required. It is still sometimes the case that medical assistants are trained on the job. Applicants usually need a high school diploma or the equivalent. Volunteer experience in the health care field may also be helpful.

Formal programs in medical assisting are offered in vocational-technical high schools, postsecondary vocational schools, community and junior colleges, and colleges and universities. Programs at colleges usually last one to two years and lead to an associate's degree. Vocational programs can take as long as one year and lead to a diploma or certificate. Courses cover anatomy, physiology, and medical terminology as well as typing, transcription, record-keeping, accounting, and insurance processing. Students learn laboratory techniques, clinical and diagnostic procedures, pharmaceutical principles, medication administration, and first aid. They are also instructed in office practices, patient relations, and medical law and ethics. Accredited programs may include an externship that provides practical experience in physicians' offices, hospitals, or other health care facilities.

Two agencies recognized by the U.S. Department of Education accredit programs in medical assisting: the American Medical Association's Commission on Accreditation of Allied Health Education Programs (CAAHEP) and the Accrediting Bureau of Health Education Schools (ABHES). In 2001, there were 500 medical assisting programs accredited by CAAHEP and 170 accredited by ABHES. The Joint Review Committee for Ophthalmic Medical Personnel has accredited 14 programs in ophthalmic medical assisting.

Although licensing for medical assistants is not available, some states require them to take a test or a short course before they can take x rays or perform other specific clinical tasks. In general, employers prefer to hire experienced workers or certified applicants who have passed a national examination, indicating that the medical assistant meets certain standards of competence. The American Association of Medical Assistants awards the Certified Medical Assistant credential; the American Medical Technologists awards the Registered Medical Assistant credential; the American Society of Podiatric Medical Assistants awards the Podiatric Medical Assistant Certified credential; and the Joint Commission on Allied Health Personnel in Ophthalmology awards the Ophthalmic Medical Assistant credential at three levels: Certified Ophthalmic Assistant, Certified Ophthalmic Technician, and Certified Ophthalmic Medical Technologist.

High school students interested in a career in medical assisting should take typing, data processing, computer technology, and bookkeeping. Courses on biology and health would be helpful as well.

Persons considering this career should have the ability to work with people of all ages, temperaments, and personalities. Because medical assistants deal with the public, a neat, well-groomed appearance and a courteous, pleasant manner are necessary. Medical assistants must be good at putting patients at ease, listening to them, and explaining physicians' instructions. Conscientiousness and respect for the confidential nature of medical information are required. Clinical duties require a reasonable level of manual dexterity and visual acuity.

Employment Trends

Employment of medical assistants is expected to grow much faster than the average for all occupations through the year 2008 as the health services industry expands.

Employment growth will be driven by the increased medical needs of an aging population, growth in the number of health practitioners, more diagnostic testing, and the increased volume and complexity of paperwork. Most job openings, however, will result from the need to replace experienced assistants who leave the occupation.

In view of the high turnover as well as the preference of many physicians for trained personnel, job prospects should be excellent for medical assistants with formal training or experience, particularly those with professional certification.

Earnings

The earnings of medical assistants vary, depending on experience, skill level, and location. Median annual earnings of medical assistants were \$23,000. The middle 50 percent earned between \$19,460 and \$27,460 per year. The lowest 10 percent earned less than \$16,700 and the highest 10 percent earned more than \$32,850 per year. Median annual earnings in the industries employing the largest number of medical assistants were as follows:

Offices and clinics of medical doctors	\$23,610
Hospitals	22,950
Health and allied services	22,860
Offices of osteopathic physicians	21,420
Offices of other health practitioners	20,860

Related Occupations

Workers in other medical support occupations include medical secretaries, hospital admitting clerks, pharmacy helpers, medical record clerks, dental assistants, occupational therapy aides, and physical therapy aides.

Additional Information

Information about career opportunities, CAAHEP-accredited educational programs in medical assisting, and the Certified Medical Assistant exam is available from:

- The American Association of Medical Assistants, 20 North Wacker Dr., Suite 1575, Chicago, IL 60606-2903. Internet: <http://www.aama-ntl.org>.

Information about career opportunities and the Registered Medical Assistant certification exam is available from:

- Registered Medical Assistants of American Medical Technologists, 710 Higgins Rd., Park Ridge, IL 60068-5765. Internet: <http://www.amt1.com>.

For a list of ABHES-accredited educational programs in medical assisting, write to:

- Accrediting Bureau of Health Education Schools, 803 West Broad St., Suite 730, Falls Church, VA 22046. Internet: <http://www.abhes.org>.

For information about a career as a medical assistant and schools offering training, contact:

- National Association of Health Career Schools, 2301 Academy Dr., Harrisburg, PA 17112.

Information about career opportunities, training programs, and the Certified Ophthalmic Assistant exam is available from:

- Joint Commission on Allied Health Personnel in Ophthalmology, 2025 Woodlane Dr., St. Paul, MN 55125-2995. Internet: <http://www.jcahpo.org>.

Information about careers for podiatric assistants is available from:

- American Society of Podiatric Medical Assistants, 2124 S. Austin Blvd., Cicero, IL 60650.

Athletic Trainers

Work Description

Athletic trainers are professionally trained medical technicians who work in conjunction with and under the supervision of a physician. They are responsible for the prevention and care of injuries usually associated with competitive athletics. They administer immediate

first aid to injured athletes and carry out treatment and rehabilitation procedures prescribed by the team physician. They also keep the team's coach informed of the injured athlete's condition.

Trainers' duties include taking care of minor injuries such as cuts, scratches, abrasions, and blisters; making protective devices such as mouthpieces and injury pads; and taping, wrapping, and padding injuries. Trainers must be skilled in massage and corrective exercise techniques and be able to use therapeutic equipment such as diathermy units, whirlpools, infrared lamps, and ultrasound machines. Athletic trainers also conduct conditioning and rehabilitation programs, plan menus and supervise diets, and aid in purchasing and fitting equipment. Some athletic trainers are employed by educational institutions, including secondary and higher education facilities. They often teach classes in related or nonrelated subjects as part of their regular duties.

Some athletic trainer positions require individual trainers to serve a group of schools or an entire school district. Under this arrangement, the trainer is usually located in a central place, such as a stadium, and has a small staff. In some cases, trainers take teaching positions in which they teach the skills of the profession to other athletic trainers.

Work Environment

Most athletic trainers work in secondary schools, colleges, or universities, and a limited number are employed by professional athletic teams. The nature of the work requires long and irregular hours. It is not uncommon for trainers to work 55 or more hours per week. Emergencies and illnesses requiring their attention may come up at any time, and the regular schedule includes any of the days and evenings of the week, often including holidays. Travel can be part of the job and is a necessity for trainers who work with a professional team, which may be away from home for long periods of time.

Educational and Legal Requirements

The educational minimum for entry into this work is a bachelor's degree in athletic training, but an increasing number of candidates have graduate training. The certifying agency for programs in ath-

letic training is the National Athletic Trainers Association (NATA). Typical courses of study include anatomy, physiology, physiology of exercise, kinesiology, physics, chemistry, psychology, first aid, safety, nutrition, administration of health and physical education programs, and techniques of athletic training. In addition, the program may lead to teaching certification in physical or health education.

Certification by NATA is not required to obtain employment, but it is considered a valuable credential in this field. To become a certified athletic trainer, an individual must meet a number of requirements, including having a college degree with specified courses and a teaching license. The certification candidate must also have worked for two years under a NATA supervisor, have been a member of NATA for one year, and pass the NATA certification examination. Colleges in 26 states offer approved NATA curricula.

Employment Opportunities

At present, most opportunities exist in learning institutions. However, future demand in these positions may be determined to a large extent by federal legislation that, if introduced and passed, will require each school to employ an athletic trainer. Currently, the trainers with the best employment potential for these jobs are also able to teach a subject or subjects for which there is a demand. The more subjects a trainer is able to teach, the greater the chances for employment. Competition is keenest for positions with professional athletic teams, and chances of starting a career as a professional trainer are very slim.

Advancement in this career is regulated by the employing institution or team. Although there are no set patterns of advancement, a number of possibilities exist. One would be to start as an assistant athletic trainer, progress to trainer, and then to head trainer or director of training. A trainer at an educational institution might work his or her way into an athletic administration position. The athletic trainer whose employment is with a professional team is in a somewhat special employment situation. Usually, the professional trainer works with only one sport. Although most professional teams operate only approximately six

months out of the year, they have an off-season program and employ the trainer during the full year.

Additional Information

For further information, contact:

- National Athletic Trainers Association, 2952 Stemmons Fwy., Suite 200, Dallas, TX 75247-6103.

Chapter 23



Behavioral Therapists

Key Terms

Art therapy	Manual arts therapy
Corrective therapy	Music therapy
Dance therapy	Recreational therapy
Horticultural therapy	

The objective of therapy is to help individuals with physical, mental, or social handicaps to regain their capacity for self-help and interdependence. To meet this goal, different kinds of therapists are employed, each with special knowledge and skills that can be used in rehabilitation. For example, art, dance, and music therapists bring both artistic and therapeutic skills to their work and try to improve the mental and physical well-being of their patients. Dance and art techniques are used as nonverbal means of communication, and, along with music, are often useful in helping patients resolve physical, emotional, and social problems. Horticultural therapists use gardening, an enjoyable and relaxing activity, for such purposes as training disabled or handicapped patients, evaluating the abilities of patients, or as a social activity for patients. Corrective therapists treat their patients by using medically prescribed exercises and activities. Physical therapists work with persons who are physically disabled by illness, accident, or birth defects. They use exercise and such treatments as heat, cold, and electricity to improve the patient's condition. (See Chapter 20.)

Occupational therapists help individuals with physical or emotional disabilities by teaching daily living skills or job skills. (See Chapter 21.) Manual arts therapists use industrial arts such as graphics or wood or metal working to rehabilitate their patients. Recreation therapists use sports, games, crafts, camping, and hobbies as part of the rehabilitation of ill, disabled, or handicapped persons. Athletic trainers care for and try to prevent injuries of individuals engaged in professional, amateur, and school athletics. (See Chapter 22.)

Persons whose limbs are lost or disabled through injury, disease, or birth defects require highly skilled and specialized services, provided by orthopedists and prosthetists. Orthopedists make and fit orthopedic braces, while prosthetists make and fit artificial limbs.

Speech pathologists and audiologists work with children and adults who have speech, language, or hearing impairments. (See Chapter 14.) Rehabilitation counselors help persons with physical, mental, or social problems return to or begin a normal life by obtaining satisfactory work. (See Chapter 18 on psychology.)

It is obvious that therapy and related activities offer a broad area for career exploration by interested individuals, and in the following pages some of the specializations not described in previous chapter are discussed in more detail.

Art Therapists

Expressing ideas and feelings through art and achieving some sense of well-being as a result is a very old concept. Pictures have been found scratched or painted on the cave walls of primitive man, and many ancient tools and objects were designed to be not only useful but also artistically pleasing. Exactly what made the cave dwellers and their ancestors draw the pictures or design the objects is not known, but it can be assumed that they must have received some sort of emotional satisfaction from creating them. This is the basis of *art therapy*, which, simply stated, uses the concept of art as a device for nonverbal expression and communication. Art therapy attempts to resolve the individual's emotional conflicts and encourages personal growth and self-understanding.

Work Description and Environment

The most practical application of art therapy has been with those suffering from mental disorders, mental retardation, or other problems of social and psychological development, but innovative work has also been done on a variety of other problems. Art therapists confer with members of the medical health team to diagnose patients' problems. Combining art, education, and insight, art therapists assess their patients' problems, strengths, and weaknesses and determine a course of treatment best suited to accomplish specific treatment goals. Art therapists plan art activities, maintain and distribute supplies and materials, provide art instruction, and observe and record the various interactions that occur

during therapy sessions. Emphasis is not placed on the quality of the product, but rather on the well-being of the patient. Art therapists often work as members of teams of other professionals and coordinate their activities with those of other therapists.

Art therapists work with people of all ages who have various degrees of impairment or with normal populations in schools and growth centers. They may practice with individuals, groups, and/or families in clinical, educational, or rehabilitative settings, which include private psychiatric hospitals and clinics, community health centers, geriatric centers, drug and alcohol clinics, nursing homes, halfway houses, prisons, public and private schools, and institutions for the emotionally disturbed, learning disabled, brain damaged, deaf, blind, physically handicapped, and multiple disabled. Many art therapists who work in clinics also teach art therapy in colleges or universities, and may do research in some aspect of therapy. However, the primary involvement of most art therapists is with clients in some type of clinical setting.

Art therapists normally work a 40-hour week, although the hours and degree of responsibility vary with the setting. The facilities in which they work are usually fully equipped with art materials, tables, chairs, art desks, and storage areas, and in general the working conditions are good.

Educational and Legal Requirements

Entry into the field of art therapy at the professional level requires a master's degree or its equivalent in institutional training. Undergraduate work in the fine arts and the behavioral and social sciences is not only desirable but, in most instances, required for entry to the master's program. An undergraduate program specifically planned to lead to a degree in art therapy would be even more helpful. Training is offered at a number of schools, clinical facilities, and other institutions nationwide.

Licensure is not required for art therapists unless they work in public schools. In such cases, they must be licensed in the state in which they plan to work. The American Art Therapy Association has established a national registry for art therapists, and to be accepted for registration with the association an applicant must meet certain experience and educational requirements. A master's degree in art therapy and one year of work experience will satisfy

the requirements, but there are several other ways in which the requirements may be met. Specific information on other methods of meeting registration standards can be obtained from the association. Registration is not always required for employment, but each year more employers are asking for this credential.

Employment Opportunities

The employment outlook for qualified art therapists is favorable, and opportunities in this field are expected to grow.

There are no uniform paths of advancement for art therapists. Promotion may take many forms, including assuming additional responsibility, administering an art therapy project, or moving into a specialty field such as special education, psychotherapy, hospice, pediatric oncology, or drug counseling. In most instances, promotions are based on experience and/or additional training.

Additional Information

For further information, contact:

- American Art Therapy Association, Inc., 1980 Isaac Newton Square S., Reston, VA 22090. Internet: <http://www.louisville.edu/groups/aata-www>.

Corrective Therapists

Work Description

Corrective therapy is used to treat patients by applying medically prescribed physical exercises and activities that strengthen and coordinate body functions and prevent muscular deterioration caused by inactivity due to illness. Corrective therapists apply the principles, tools, techniques, and psychology of medically oriented physical education to help persons with physical and mental problems meet their treatment goals. Therapists design or adjust equipment and devise exercises to meet the needs of patients. They

instruct patients in proper exercise techniques and equipment usage to meet specified objectives such as walking, joint flexibility, endurance, strength, and emotional self-confidence and security. For the physically handicapped, the exercise routines are aimed at developing strength, dexterity, and coordination of muscles. Therapists teach exercise routines to wheelchair patients, instruct amputees or partially paralyzed patients how to walk and move around, and sometimes give driving lessons to handicapped persons using specially equipped automobiles. They also advise patients on the use of braces, artificial limbs, and other devices. For the emotionally ill or mentally retarded, they use exercises to relieve frustration or tension, or to bring about social involvement.

Corrective therapists also judge strength, endurance, and self-care ability to gauge the patient's recovery at successive stages. Corrective therapists participate in staff planning sessions and make ward rounds as members of health care teams. They prepare progress reports on patients' responses to therapeutic treatment exercises and present findings orally or in writing at staff meetings and conferences. They also counsel members of the patients' families on therapeutic matters. Corrective therapy should not be confused with physical therapy. Physical therapists employ physical agents such as heat, water, and light in treatment routines, and perform tests to determine nerve, muscle, and skin condition and reaction. Corrective therapy is used mainly in the more advanced stages of rehabilitation where functional training is required.

Some corrective therapists choose areas of specialization. Corrective therapists who specialize in driver training are concerned with teaching handicapped persons safe driving methods, developing their remaining skills, and teaching them to use special driving devices. Seminars and workshops in driver training are required for this specialization, and therapists working in this area are primarily employed by the Veterans Administration. Corrective therapists who specialize in cardiac rehabilitation are concerned with conducting programs of cardiorespiratory rehabilitation, which entail checking patients' pulmonary levels, establishing work performance limits, and establishing levels of progression to attain optimal fitness capabilities. Workers receive specialized training in cardiopulmonary theory, methodology, and techniques and the use of specialized equipment. Some corrective therapists are beginning to specialize in therapeutic pools in numerous hospital and health education sites. This specialization requires water safety

certifications, such as those given by the Red Cross or YMCA/YWCA, and knowledge of effects of water activities and effects of water on exercise performance.

Work Environment

Corrective therapists work in a variety of government, public, and private facilities, including hospitals, rehabilitation clinics, schools, colleges, nursing homes, special schools, recreation facilities, and camps for the handicapped. They work a 40-hour week, usually in an indoor setting, although outdoor recreation areas and pools are also used. There are a variety of physical demands involved in being a corrective therapist, such as demonstrating exercises and equipment use, lifting and balancing patients, and handling and adjusting therapeutic exercise equipment.

Educational and Legal Requirements

A high school student considering a career in corrective therapy can plan on spending at least four years in obtaining a bachelor's degree in physical education from an accredited college or university. In addition to completing degree requirements, prospective corrective therapists must also complete a 400-hour clinical internship at an approved institution. Courses taken as part of the degree requirements, or in addition to them, include medical orientation courses in neurology, pathology, therapeutic exercise, developmental psychology, psychology of the exceptional/atypical, kinesiology, advanced anatomy, neuromuscular reeducation, and physiological psychology. Many of these courses are required for a master's degree, and while this level of education is not required for entry into the field, it is an asset in seeking both entry-level positions and promotions.

There are no state licensure requirements for corrective therapists. However, therapists are eligible for certification if they meet requirements set by the American Corrective Therapy Association, which include a bachelor's degree in physical education, specific medical/therapeutic orientation courses, 400 hours of clinical training experience, and a satisfactory score on the certification examination. Although not normally considered a condition of

employment, this certification is advantageous because it indicates that the therapist has met the standards set by the association. The association also encourages its membership to enroll in continuing education courses as a means of improving professional growth and development.

Employment Opportunities

The employment opportunities for corrective therapists are favorable. There is also the prospect of growth and expansion in the profession as the importance of corrective therapists in rehabilitation is recognized to a greater degree and as government funding of programs increases.

Advancement to supervisory or administrative positions is possible for qualified therapists. Promotions are generally based on work experience, level of skill, and the completion of advanced education courses. Therapists in government facilities can advance through traditional civil service methods.

Additional Information

For further information, contact:

- American Corrective Therapy Association, 25908 148th Rd., Rosedale, NY 11422.

Dance Therapists

For centuries, dancing and related types of body movement have been recognized and used as a form of entertainment and as a way to ease tension and obtain other physical and emotional benefits. To many, this type of physical activity produces a renewal of emotional well-being, a means of self-expression, and a recharging of energy that has been drained by the frustrations of everyday living. In this sense, dancing and body movement are therapeutic activities. *Dance therapy*, used with individuals who have emotional and often physical impairments caused by injury, illness, or birth

defects, has been developed by dance therapists, who use dance and body movement as a tool to further emotional and physical integration and well-being. They take advantage of the expressive and communicative aspects of dance to help people resolve social, emotional, and physical disorders.

Work Description

Dance therapists make an assessment of their clients' emotional and social behavior, movement capabilities, and general posture. They then determine what types of movement experiences will best help clients develop an increased awareness of feelings and nonverbal behavior, a broader scope of interaction of mind and body, an improved body image, improved social relations, and relief from physical and emotional blocks. Working with individuals and groups, dance therapists plan and conduct movement sessions designed to achieve those goals and objectives. Dance therapists also participate in case conferences, staff meetings, community meetings, verbal therapy sessions, and other activities, depending on the setting in which they work. Some engage in research on movement behavior, teach or train others in educational or employment settings, or act as consultants to various agencies or organizations.

While there are many varieties of dance therapy settings, only one real area of specialization exists: movement research. The movement researcher observes, records, and analyzes nonverbal behavior in live settings, on videotape, or on film. In addition to the general knowledge and experience required of dance therapists, movement researchers must have completed advanced courses in movement observation and research methods.

Work Environment

Dance therapists work in a variety of mental health settings, including psychiatric hospitals, clinics, developmental centers, correctional facilities, special schools, substance-abuse programs, and facilities for the aged. Registered dance therapists may also work in private practice or teach in educational facilities.

Hours and other working conditions vary, as do the facilities. Some are modern and well equipped; others are older and sometimes quite sparse in terms of equipment and other elements that contribute to a pleasant work/therapy setting. Most aspects of the work involve close physical contact with different types of patient groups as well as a good deal of physical activity. In all instances, strength, flexibility, stamina, and a strong desire to relate to and help others are necessary.

Educational and Legal Requirements

There are two ways in which an individual can prepare for a career as a dance therapist. The first is a master's degree from a program in dance therapy, which is required for registration with the American Dance Therapy Association (ADTA) and is recommended by the association as the professional level of training. The second way is a master's degree in a related field (for example, psychology) with intensive training in the theory and practice of dance therapy and with internship experience.

Neither method of preparation requires specific high school courses, but dance training in a broad range of techniques is strongly preferred. The minimum preprofessional training includes a B.S. or B.A. degree with extensive training in a variety of dance forms, coursework in psychology and other social sciences, anatomy, and kinesiology. The preferred preprofessional training is an emphasis in dance or psychology, courses in dance theory, performing and choreographic experience, experience in teaching dance to normal populations, and experience in personal psychotherapy. Either program may require a demonstration or performance as part of the interview for acceptance.

The master's program in dance therapy, which is from 1 to 2 years in length, includes training in both theoretical and practical aspects of dance therapy. Studies emphasize using body movement to establish communication and rapport with clients and learning to observe and analyze movement behavior. Courses include practical training and dance therapy, movement observation, psychodynamics, and studies in human behavior. Supervised experience in clinical settings, field visits, and internships are also included.

The possible alternative requires a master's degree in a related field (such as dance, psychology, or social work), at least 120 hours each of theory and practice of dance therapy, and coursework in group dynamics, anatomy and kinesiology, and techniques of observing and assessing movement behavior. A 700-hour clinical internship, supervised by a registered dance therapist, is also required. The disadvantage of this type of program is that it may lack the coherence and integration of a master's degree program in dance therapy. It is useful for those who already have a master's degree in a related field.

There are no licensing requirements for this work, and most employers do not require registration or certification. However, ADTA has established a registry to ensure professional standards of training and practice. Registration with this association is needed to work in private practice and to train dance therapy students. It may also be preferred by many employers, especially if there is a dance therapy internship program at the facility or one is projected for the future, but there are no laws requiring registration for employment. The requirements for qualifying for registration with the ADTA include membership in ADTA; a master's degree with the prescribed education, training, and experience requirements; two years of paid experience, with work in several specific areas of dance therapy; and a written description of a therapy session showing an integration of dance therapy theory and practice.

Employment Opportunities

Dance therapy jobs are in short supply, but several factors may influence this situation favorably, including a growing interest in nonverbal communication, awareness of the importance of body image in mental health and education, and the maintenance of high training standards. If each of these factors remains constant or becomes more important and money is available, demand for dance therapists in all areas should open up. Interested individuals should check openings in their areas and contact the professional association to get a detailed report on local labor market conditions.

In most cases, advancement possibilities in this field are determined by the requirements of the employing facility, and standards and practices vary greatly. A master's degree and paid work experience are typically factors given heavy consideration for promotion to senior clinical positions in most facilities. Teaching or administrative skills are also quite useful for purposes of advancement.

Additional Information

For further information, contact:

- American Dance Therapy Association, 2000 Century Plaza, Suite 108, Columbia, MD 21044.

Horticulture Therapists

Work Description

Horticultural therapy uses horticultural activities as the primary treatment method to bring about a beneficial change in an individual with a physical, mental, or social handicap. Horticulture therapists use gardening for a variety of purposes, such as to rehabilitate patients after illness or injury; train impaired, disabled, and handicapped persons; evaluate patients' disabilities and capabilities; and provide a social activity for physically and mentally impaired persons.

Horticulture therapists organize indoor or outdoor programs for patients with different types of problems and usually do so in a group setting. They use plant materials to help handicapped individuals improve their emotional attitudes through a change in self-concept, their social skills through nonthreatening relations with others, their physical skills through activities requiring both group and fine-motor coordination, and their mental skills through planning, preparing, and caring for their plants. Horticulture therapists work closely with other staff members to design and conduct a program suited to the needs of the particular client. In some programs, particularly those related to vocational rehabilitation, the plants may be sold, and in this situation the therapist may also have some business responsibilities. In addition to working directly with

patients, horticulture therapists often teach at local colleges or universities and conduct workshops and other training programs.

Work Environment

Most horticulture therapists work in public or private facilities for the handicapped, including convalescent homes, juvenile centers, schools and training centers for the mentally retarded, psychiatric hospitals, and general care hospitals. Horticulture therapists work closely with both people and plants, and the work setting is often a greenhouse or outside garden. Care of plants can be demanding, and the ability to move the hands easily and skillfully is very important. However, there are no physical requirements for the job, and handicapped individuals may, in fact, have the advantage of serving as role models for patients.

Educational and Legal Requirements

Degrees in horticultural therapy are offered by colleges of agriculture and departments of horticulture and forestry in a number of universities. There are four levels of degrees in horticultural therapy: associate of arts, bachelor of science, master of science, and a doctorate. The length of training varies with the student's academic goal, which may be an associate's degree leading to a position as a horticulture therapy aide or a bachelor of science degree leading to a position as a horticulture therapist. The training program consists of a horticulture curriculum with courses related to therapy as a specialization, plus internship and field studies.

Horticulture therapists are registered under a voluntary registration procedure administered by the National Council for Therapy and Rehabilitation through Horticulture. Neither registration nor continuing education is required at this time; however, all practitioners are strongly encouraged to participate.

Employment Opportunities

As this is a relatively new professional field, it is difficult to make accurate projections as to future occupational opportunities. However, a National Council for Therapy and Rehabilitation

through Horticulture study conducted under the auspices of the Department of Education indicates that the potential for jobs in this field is excellent and will continue to increase.

Most horticulture therapy programs today are new and small, but they show signs of rapid growth. As programs increase in size, the opportunities for supervisory and other higher-level positions are expected to expand. In addition, therapists who complete advanced training and education can obtain teaching positions in their field.

Additional Information

For further information, contact:

- National Council for Therapy and Rehabilitation through Horticulture, 633 S. Washington St., Alexandria, VA 22314.

Manual Arts Therapists

Work Description

Manual arts therapy uses mechanical, technical, and industrial activities that are vocationally significant to assist patients in their recovery and in maintaining, improving, or developing work skills. Under the direction of a physician, manual arts therapists develop a program of actual or simulated work situations, which help patients to prepare for an early return to their communities as well as to the world of work.

In rehabilitation, manual arts therapists apply clinical techniques for treating the physical or mental conditions of their patients, observe their behavior, assist in their adjustment to work situations, and evaluate their manual abilities and work skills. The primary purpose is to engage patients in therapeutic activities that absorb them and help in their recovery, giving them a sense of confidence and achievement. At the same time, these work activities have a practical value because they serve to retrain patients in their own skills or trades or, where disability makes this reentry

impossible, to help them explore and learn new work skills or avocational activities.

Manual arts therapists cooperate with all members of the rehabilitation team to plan and organize work activities, considering the patient's disabilities and capabilities. Manual arts therapy may be the only therapy prescribed for a patient, or it may be used in conjunction with other therapies in a combined treatment program. It may be prescribed at any stage in the hospitalization, depending on the patient's condition and rehabilitation goals.

Patients may explore various work activities offered in manual arts therapy, including wood working, metal working, electronics, printing and graphic arts, and sometimes agriculture. For example, a construction worker who has lost a leg in a fall may discover an interest in drawing and be taught technical drafting. A bedridden patient may learn basic electricity by using batteries and simple hookups and later advance to electronics. A patient in a wheelchair may explore jewelry or watch repair. A group of mental patients may help maintain hospital grounds. It is the job of the manual arts therapist to observe, evaluate, and guide patients in their work activities toward their rehabilitation goals.

Manual arts therapists prepare reports describing patients' emotional and social adjustment, physical performance, and work tolerance. The rehabilitation team uses these reports to judge the progress of patients and their ability to meet the physical and mental demands of their place in the community and in the world of work.

Work Environment

The majority of manual arts therapists is employed in hospitals and centers operated by the Veterans Administration, but they also work in sheltered workshops, mental health clinics, workers' compensation rehabilitation centers, and rehabilitation centers for the blind. The federal law that requires schooling for all handicapped children has opened a new field. Therapists normally work indoors from 8:00 A.M. to 4:30 P.M. five days a week, do little traveling, and generally have good working conditions. Because of the workshop setting, some noise and dust fumes are normally present, but these factors are usually controlled.

Educational and Legal Requirements

The minimum qualification for employment in this field is a bachelor's degree in industrial arts or manual arts therapy. In addition, candidates must complete clinical training lasting several months, during which the student trainees work with fully qualified therapists and participate under supervision in a treatment program. Clinical training is usually given in hospitals or rehabilitation centers affiliated with colleges.

The American Association for Rehabilitation Therapy is the professional society for manual arts therapists and sponsors the Registration of Medical Rehabilitation Therapists and Specialists. Registration requires that a therapist be employed for one year in the field before being eligible. Registry and membership in the association are not conditions for employment, but both are considered desirable, because of the opportunities for continuing education by attending seminars, meetings, and conferences, and for professional growth by exchange of information with other professionals.

Employment Opportunities

The employment outlook for manual arts therapists is average. With the current growth in rehabilitation services, the demand for manual arts therapists is expected to increase slightly. The largest single employer is the Veterans Administration, with entry through the federal civil service system. Manual arts therapists may also be employed by state, local, and private facilities. Promotional opportunities in civil service are determined by specific rules; in private facilities they vary widely. Experience and competence are significant factors for promotion.

Additional Information

For further information, contact:

- American Association for Rehabilitation Therapy, P.O. Box 93, North Little Rock, AR 72116.

Music Therapists

Music therapy is an allied health profession in which music is used within a therapeutic relationship to address the physical, psychological, cognitive, and social needs of individuals.

Music has been a part of almost every culture and is recognized everywhere as having healing value. Much has been written about its effects, and it is often described as soothing, relaxing, exciting, moving, or in terms of some other emotional feeling it creates in the listener or performer. For each individual it serves a different purpose and, for some, many purposes. For those who are disabled, music may become part of medical treatment.

Music therapists have an understanding of music psychology and are specialists in using music as a means of accomplishing treatment goals that involve the restoration, maintenance, and improvement of mental and physical health. In its use with the mentally ill, music therapy may achieve changes in patients' behavior that will give them new understanding of themselves and of the world around them. This can serve as a basis for improved mental health and more effective adjustment to normal living.

Work Description

Often working as members of a team that may include other therapists, psychiatrists, psychologists, social workers, and special educators, music therapists make an evaluation of how a client might be helped through a music program. They determine what goals and objectives can probably be met and plan musical activities and experiences that are likely to meet them, on both an individual and a group basis. Therapists treat patients of all age groups, ranging from disturbed small children and adolescents to adults who suffer from mental illness of many types and various degrees of seriousness. The mentally retarded, cerebral palsied, crippled, and blind make up a group that is second only to the mentally ill in numbers receiving music therapy.

As members of the mental health team, music therapists devise programs to achieve aims prescribed by attending psychiatrists, and the treatment results are evaluated periodically. Music therapists may create programs of many kinds in an effort to gain and to hold the patient's interest. Much depends on the patient's potential for training; what would be possible for one would be inappropriate for another. Group singing is commonly used. Music appreciation and music education are appealing to others. Every effort is made to improve skills acquired in past years and to develop an interest that will give a new dimension to normal living.

Unlike most music programs, music therapy programs focus on the well-being of the client rather than a perfected musical product. Voice as well as traditional and nontraditional instruments and music are used, and individual lessons are provided. In addition, instrumental and/or vocal music is often combined with body movements as a part of therapy.

Work Environment

Music therapists find employment in a variety of facilities in all parts of the country. They are usually employed in psychiatric hospitals, mental retardation centers, physical disability treatment and training institutions, day care centers, nursing homes, special education programs, community mental health centers, special services agencies, and other related facilities.

As in many therapy situations, music therapists work very closely with their clients and must be able to relate to them and their problems in a warm, professional manner. The work is not always a relaxing, pleasurable experience. The process of strengthening discipline and changing behavior can arouse temporary anxiety and negative attitudes. Music therapists must be able to deal with these problems when they arise and use tact and resourcefulness in solving them. They often must work in close cooperation with therapists in other disciplines when physical facilities are shared to plan and schedule activities. Standard work hours are usual, but music therapists may be called on from time to time to work evening hours and weekends.

Educational and Legal Requirements

The amount and type of professional training and preparation required for employment as a music therapist vary from employer to employer; there are people working in the field who have advanced degrees and others who were not trained in academic institutions. However, as the field grows, standard educational requirements are being established. The minimum training and preparation currently recommended by the two associations that certify and register music therapists include a bachelor's degree in music therapy plus completion of a six-month internship in an approved mental health, special education, or health care facility. It is to the student's advantage to attend a school that combines clinical experience and classroom work at the same time. Courses leading to the bachelor's degree in music therapy include psychology, sociology, music therapy, anthropology, music, biological and social sciences, and general education courses.

Licensure is not required of music therapists except for those working in public schools, who must be licensed as special educators in the state in which they are employed. Certification and registration can be obtained from the National Association for Music Therapy (NAMT) on completion of both the prescribed academic course of study at a recognized university and a six-month clinical internship at an approved clinical training facility. Certification and registration as a Registered Music Therapist (RMT) makes available many opportunities for employment.

Employment Opportunities

Employment prospects depend very much on health care trends, economic conditions, and the role of government in health care, and projections are difficult to make. However, music therapy is being used today in a wider variety of treatment institutions than ever before and has been gaining acceptance as an alternative form of traditional health care. If these two trends continue, it should have a favorable influence on the demand for music therapists.

Music therapists usually enter this career field because there is something stimulating about working with people in a therapy situation that involves music. There are rewards within the field

itself, and there is always the possibility of being recognized for outstanding accomplishments or for having developed new and innovative methods. Advancement is possible in this field; it almost always requires the music therapist to devote less time to actual music therapy and more to administrative duties. For example, the usual path of advancement is from music therapist to department supervisor, coordinator of an activities therapy department, or other related administrative position. So, in addition to the advancement requirements of experience and/or additional education, the therapist must agree to accept an administrative position to be promoted. One other avenue of what might be considered advancement, but which is often thought of as a separate career area, is university teaching. For a teaching position, the music therapist needs both clinical experience and a graduate degree in music therapy or a related academic area.

Additional Information

For further information, contact:

- National Association for Music Therapy, Inc., 8455 Colesville Rd., Suite 1000, Silver Spring, MD 20910. Internet: <http://www.cais.net/namt/career.html>.

Recreational Therapists

Work Description

Recreational therapists employ medically approved activities to treat or maintain the physical, mental, and emotional well-being of patients. Activities include sports, games, dance, drama, arts and crafts, music, and field trips. They help individuals build confidence, socialize effectively, and remediate the effects of illness or disability. Recreational therapists should not be confused with recreation workers, who organize recreational activities for the purpose of enjoyment.

Recreational therapists strive to minimize patients' symptoms and to improve their physical, mental, and emotional well-being. Enhancing the patient's ability to take part in everyday life is the

primary goal of *recreational therapy*; interesting and rewarding activities provide the means for working toward that goal.

Activities employed by recreational therapists are as varied as the interests and abilities of the people they serve. Therapists might organize athletic events, dances, arts and crafts, musical activities, trips to the movies, field trips, or poetry readings. Apart from sheer enjoyment, such activities provide opportunities for exercise and social participation, and they may also help relieve anxiety, build confidence, or promote independence.

Recreational therapy is a relatively new field. Closely related to occupational therapy, it shares that profession's view that ordinary activities can be used to put disabled persons on the road to improvement and, possibly, lead to full recovery. Together with the "expressive" therapies—art, music, drama, and dance—recreational therapy owes much to the discovery that soldiers suffering from battle fatigue, shock, and emotional trauma responded favorably to organized treatment programs. During World War II, the Veterans Administration (VA) organized medical recreational activities in VA hospitals.

Recreational therapists are found in a variety of settings, including mental hospitals, psychiatric "day hospitals," community mental health centers, nursing homes, adult day care programs, residential facilities for the mentally retarded, school systems, and prisons. The specifics of the job—the extent to which therapists work on their own or as a member of a multidisciplinary team—vary with the employment setting and the capacities of the patients or clients.

In hospitals and nursing homes, recreational therapists are usually located in the activities department or therapy department, together with therapists and their assistants from such disciplines as music, dance, art, and occupational therapy. They work on a team basis with these and other health professionals as they go about evaluating the patient, developing a coordinated treatment plan, and monitoring progress. Job responsibilities may also include directing the support staff. At times, it is the therapeutic assistant who actually conducts recreational programs and spends the most time with the patient.

Recreational therapists assess patients based on information from medical records, medical staff, family, and patients themselves. They then develop therapeutic activity programs consistent with patients' needs and interests. For instance, a patient having trouble socializing may be helped to play games with others, or a patient with a right side paralysis may be helped to use the left arm to throw a ball or swing a racket.

Community-based recreational therapists work in park and recreation departments, special education programs, or programs for the elderly or disabled. In these programs therapists help patients develop leisure activities and provide them opportunities for exercise, mental stimulation, creativity, and fun.

Progress may be slow; sometimes there is no progress at all. Recreation therapists understand this and set goals accordingly. A patient having trouble socializing, for example, may express interest in chess but be overwhelmed by the prospect of actually playing because that would involve interaction with another person. The therapist would proceed slowly, first letting the patient observe a game and then assigning a therapeutic assistant to serve as a chess partner for weeks or even months—as long as it takes for the patient to gain the confidence to seek out other patients as partners.

Recreational therapists are careful to observe patients' reactions to the activities in which they are involved. The therapist might note that one patient participates in outdoor activities that require teamwork, yet another patient, formerly cooperative, has become combative and disruptive. Observations such as these provide the basis for the therapist's periodic review of each patient's activity program. The program is likely to be modified as the patient's condition changes.

Documentation is an important part of the recreational therapist's job. Among the records therapists must keep are the initial evaluation, progress notes, reports to the physician, internal staff notes, Medicare records, and discharge notes. These records are used to keep track of the patient's condition, document treatment programs, monitor progress, and justify changes or end treatment; they are also used for billing.

In nursing homes, recreational therapists evaluate residents' capabilities much as they do in hospitals. They look at medical records, talk with residents to learn about their interests, and discuss each resident's condition with other members of the staff. Often, the therapist groups residents according to common interests and ability levels, and then plans field trips, entertainment, singing, crafts, exercises, and other group activities. The therapist documents residents' responses to the activities and continually searches for ways of heightening residents' enjoyment of recreational and leisure activities, not just in the facility, but in the surrounding community as well.

Because nursing home residents are likely to remain in the facility for months or years, the activities program makes a big difference in the quality of their lives. Without the stimulation of interesting events, the daily routine of a nursing home can be monotonous and depressing, and residents will deteriorate. In some nursing homes, recreational therapists direct the activities program. In other facilities, activities coordinators plan and carry out the program under the part-time supervision of a consultant who is either a recreational therapist or an occupational therapist.

The therapist in a community setting might work in day care programs for the elderly or in a program for mentally retarded adults operated by a county recreation department. No matter what the disability, recreational therapists in community settings face the added logistical challenge of arranging transportation and escort services, if necessary, for prospective participants. Coordinating transportation is less of a problem in hospitals and nursing homes, where clients are all under one roof. Developing therapeutic recreation programs in community settings accordingly requires a large measure of organizational ability, flexibility, and ingenuity.

Work Environment

Working conditions vary according to the employment setting, facilities available, and activity being implemented. In a hospital, recreational therapists might work in a ward or in a specially equipped activity room. In a nursing home, the recreational therapist might work in a room equipped with arts and crafts materials. In a community setting, the recreational therapist is likely to be in several places in the course of a day or week. Interviewing clients and planning events take place in an office, but when leading activities, the recreational therapist may be working in a gymnasium, outdoors on a nature walk, or in a swimming pool.

In general, recreational therapists work in well-lighted, well-ventilated areas. The job may be physically tiring because therapists often are on their feet all day and may have to lift and carry equipment. Recreational therapists generally work a standard 40-hour week, although weekend and evening hours are occasionally required. Therapists holding supervisory positions may be required to work overtime depending on the workload.

Employment Opportunities

Most recently, recreational therapists held about 29,000 jobs. Approximately 30 percent were in hospitals and 40 percent were in nursing homes. Other jobs were in community mental health centers, adult day care programs, correctional facilities, residential facilities, community programs for people with disabilities, and substance abuse centers. One in three therapists was self-employed, generally contracting with nursing homes or community agencies to develop and oversee programs.

Educational and Legal Requirements

A bachelor's degree in therapeutic recreation, or in recreation with a concentration in therapeutic recreation, is the usual requirement for entry-level positions. Individuals may qualify for paraprofessional positions with an associate degree in therapeutic recreation or a health care-related field. An associate degree in recreational therapy; training in art, drama, or music therapy; or qualifying work experience may be sufficient to satisfy the requirements for activity director positions in nursing homes.

Most employers prefer to hire candidates who are certified therapeutic recreation specialists (CTRS). The National Council for Therapeutic Recreation Certification (NCTRC) certifies these specialists. To become certified, CTRSs must have a bachelor's degree, pass a written certification examination, and complete an internship of at least 360 hours under the supervision of a certified therapeutic recreation specialist. Some colleges or agencies may require 600 hours of internship.

There are approximately 160 programs geared toward recreational therapists. Most offer bachelor's degrees, although some offer associate, master's, or doctoral degrees. As of 2003, specialists will be required to complete an internship of at least 480 hours (currently the requirement is 360 hours), in addition to the degree and examination requirements.

Recreational therapy programs include courses in assessment, treatment and program planning, intervention design, and evaluation. Students also study human anatomy, physiology, abnormal psychology, medical and psychiatric terminology, characteristics of illnesses and disabilities, professional ethics, and the use of assistive devices and technology.

Persons considering this career must be able to work with people of all ages, temperaments, and personalities. To gain patients' confidence, it is necessary to have good communication skills and a warm, friendly personality that inspires both trust and respect. In addition, the therapist needs to have ingenuity and imagination in adapting activities to individual needs. The potential therapist must be skilled, patient, and resourceful in teaching and dealing with patients. Good physical coordination is necessary to demonstrate or participate in group activities.

Newly graduated recreational therapists generally begin as staff therapists. Advancement is chiefly to supervisory or administrative positions. Some therapists teach, conduct research, or do consulting work on a contract basis.

Employment Trends

Employment of recreational therapists is expected to grow as fast as the average for all occupations through 2008 because of anticipated expansion in long-term care, physical and psychiatric rehabilitation, and services for people with disabilities. The total number of job openings will be relatively low, however, because the occupation is small. Opportunities should be best for individuals with a bachelor's degree in therapeutic recreation or in recreation with an option in therapeutic recreation.

Health care facilities will provide a growing number of jobs in hospital-based adult day care and outpatient programs and in units offering short-term mental health and alcohol or drug abuse services. Rehabilitation, home health care, transitional programs, and psychiatric facilities will provide additional jobs for recreational therapists.

The rapidly growing number of older adults is expected to spur job growth for therapeutic recreation specialists and recreational therapy paraprofessionals in assisted living facilities, adult day care programs, and social service agencies. Continued growth is also expected in community residential facilities as well as day care programs for individuals with disabilities.

Expected changes in the size and age structure of the population portend a substantial increase in the number of people with disabilities. Very rapid growth is projected for the population age 85 and older, a group that suffers a high incidence of disabling conditions. Because of better health care, people with develop-

mental disabilities such as Down's syndrome are living longer than they once did, so the number of mentally retarded persons is expected to grow. Significant growth is also projected for the mentally ill, in part because of the very large number of young adults who have reached the age of peak risk for schizophrenia and other chronic mental illnesses. The incidence of alcohol and drug dependency is also growing.

Public and private responses to the needs of older people are expected to spur job growth in nursing homes, retirement and life care communities, adult day care programs, and social service agencies. Especially rapid growth is foreseen in nursing homes, which are already the principal employer of recreational therapists.

Expansion of the nursing home industry is anticipated because of the extensive needs of the growing population of the frail elderly; the result will be far more openings for recreational therapists in nursing homes than in any other setting. A broad-based effort to improve the quality of nursing home care could lead to even more jobs, as there is general agreement that well-designed activities programs promote residents' physical and mental health. The quality of nursing home care is the subject of attention at all levels of government, but it is impossible to predict whether public concern will produce pressure for staffing changes in nursing homes.

Hospitals will account for a much smaller number of recreational therapy jobs through the year 2010. Many of these will be in hospital-based adult day care programs or in units offering short-term mental health services to individuals suffering from alcohol or drug abuse, eating disorders, depression, and similar conditions.

Little job growth is foreseen in the large public mental hospital sector because of constraints on state spending and continued support for the policy of deinstitutionalization. If current trends persist, private psychiatric hospitals will diverge from the rest of the hospital sector and register rapid employment growth. Among the reasons underlying this trend are third-party coverage for acute inpatient psychiatric care, growing public acceptance of formal treatment for drug abuse and alcoholism, and lessening of the stigma attached to receiving mental health care. Job prospects for recreational therapists in private psychiatric facilities should be favorable, although it is important to bear in

mind that jobs in this sector generally require strong clinical training or experience.

Earnings

According to the latest data, median annual earnings of recreational therapists were \$28,650. The middle 50 percent earned between \$21,780 and \$36,070 per year. The lowest 10 percent earned less than \$17,010 and the highest 10 percent earned more than \$43,810 per year. Median annual earnings for recreational therapists were \$32,520 in hospitals and \$23,240 in nursing and personal care facilities.

Related Occupations

Recreational therapists design activities to help people with disabilities lead more fulfilling and independent lives. Other workers who have similar jobs are orientation therapists for the blind, art therapists, drama therapists, dance therapists, music therapists, occupational therapists, physical therapists, and rehabilitation counselors.

Additional Information

To receive information on how to order materials describing careers and academic programs in recreational therapy, write:

- American Therapeutic Recreation Association, P.O. Box 15215, Hattiesburg, MS 39402-5215. Internet: <http://www.atra-tr.org>.
- National Therapeutic Recreation Society, 22377 Belmont Ridge Rd., Ashburn, VA 20148-4501. Internet: <http://www.nrpa.org/branches/ntrs.htm>.

Certification information may be obtained from:

- National Council for Therapeutic Recreation Certification, P.O. Box 479, Thiells, NY 10984-0479.



Part Three



Health-Related Professions

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Objectives

Objectives listed below are for all chapters in Part Three. After studying these chapters the student should be able to:

- 1.** Describe the responsibilities and work of each profession.
- 2.** Classify the specialties in each profession.
- 3.** Discuss the environment in which the work takes place.
- 4.** Identify any adjunct personnel who assist the professionals with their work.
- 5.** Compare and contrast the following factors among the professions: educational requirements, employment trends, opportunities for advancement, salary potential, and career ladders.
- 6.** Identify the professionals who do similar tasks or have similar responsibilities.
- 7.** Discuss the advantages of the national organizations to which professionals belong.
- 8.** Explain the concept and functions of interdisciplinary teams.

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Chapter 24



Clinical Laboratory Technology

Key Terms

<p>Clinical laboratory (medical) technologist</p> <p>Centrifuge</p> <p>Calibration</p> <p>Clinical chemistry</p> <p>Blood bank technology</p> <p>Cytotechnology</p> <p>Hematology</p>	<p>Histology</p> <p>Microbiology</p> <p>Immunology</p> <p>Clinical laboratory (medical) technician</p> <p>Histology technician</p> <p>Cytotechnologist</p> <p>Nuclear medicine technologist</p>
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The Laboratory Team

The practice of modern medicine would be impossible without the tests performed in the clinical laboratory. A medical team of pathologists, specialists, technologists, and technicians works together to determine the presence, extent, or absence of disease and to provide data to evaluate the effectiveness of treatment.

Physicians order laboratory work for a wide variety of reasons: Test results may be used to establish values against which future measurements can be compared; to monitor treatment, as with tests for drug levels in the blood that can indicate whether a patient is adhering to a prescribed drug regimen; to reassure patients that a disease is absent or under control; or to assess the status of a patient's health, as with cholesterol measurements.

Although physicians depend heavily on laboratory results, they do not ordinarily perform the test themselves. That is the job of clinical laboratory personnel. Clinical laboratory testing plays a crucial role in the detection, diagnosis, and treatment of disease. Clinical laboratory technologists and technicians, also known as medical technologists and technicians, perform most of these tests.

Clinical Laboratory (Medical) Technologists and Technicians

Work Description

Because changes in body fluids, tissues, and cells are often a sign that something is wrong, clinical laboratory testing plays a crucial role in the detection and diagnosis of disease. *Clinical laboratory and medical technologists* perform these tests in conjunction with pathologists (physicians who diagnose the cause and nature of disease) and other physicians or scientists who specialize in clinical chemistry, microbiology, or the other biological sciences. Medical technologists develop data on the blood, tissues, and fluids in the human body by using a variety of precision instruments.

Many clinical laboratories are highly automated, and job duties reflect this fact. Using computerized instruments that perform a number of tests simultaneously, as well as microscopes, *centrifuges*, and other kinds of sophisticated laboratory equipment, these workers perform tests, verify the results, and relay them to the patient's physician.

Depending on the worker's level of skill, he or she may run routine tests or perform complex analyses that require a number of steps to arrive at the information needed by the physician. The types of tests that clinical laboratory personnel perform and the amount of responsibility they assume vary by employment setting, but depend to a large extent on the kind of educational preparation they have. Laboratory procedures require an array of complex precision instruments and a variety of automated and electronic equipment. However, men and women interested in helping others are the foundation of a successful laboratory. They must be accurate and reliable, have an interest in science, and be able to recognize their responsibility for human lives.

Clinical laboratory and medical technologists have a bachelor's degree in medical technology or in one of the life sciences, or they have a combination of formal training and work experience. They perform complicated chemical, biological, hematological, immunologic, microscopic, and bacteriological tests. These may include chemical tests to determine blood cholesterol level, blood glucose,

or microscopic examinations of blood and other substances to detect the presence of diseases such as leukemia. Technologists microscopically examine other body constituents; make cultures of body fluid or tissue samples to determine the presence of bacteria, fungi, parasites, or other microorganisms; and analyze samples for chemical content or reaction. They also type and cross-match blood samples for transfusions.

The exact procedure depends on the test being performed. Most blood chemistry tests, for example, are highly automated. The technologist or technician *calibrates* an instrument known as a chemical analyzer, loads it with the specimens to be tested, selects the appropriate test code, and monitors the instrument to make sure it does not malfunction. When the results are ready, the technologist verifies them for accuracy and sends them out or reports them to the attending physician. If a test requires the identification of cell types, such as in leukemia, the procedures are very different. In addition to identifying the cells on a stained blood film or from bone marrow, special stains may be required, cell markers performed, and chromosome studies completed.

Technologists in small laboratories perform many types of tests, while those in large laboratories usually specialize in one type of test. Among the areas in which they can specialize are *clinical chemistry* (the chemical analysis of body fluids), *blood bank technology* (the collection and preparation of blood products for transfusion), *cytotechnology* (the study of human body cells), *hematology* (the study of blood cells), *histology* (the study of human tissue), *microbiology* (the study of bacteria and other microorganisms), and *immunology* (the study of the human immune system).

Most medical technologists perform tests ordered by physicians for their patients. Others conduct research, develop laboratory techniques, teach, or assume laboratory management and administrative duties. Some technologists work as independent consultants, advising physicians on how to set up and operate office laboratories. Others work in product development and sales.

Clinical laboratory and *medical laboratory technicians* generally have an associate's degree from a community or junior college, or a diploma or certificate from a trade or technical school. They

are mid-level laboratory supervisors. They perform a wide range of routine tests and laboratory procedures. Technicians may prepare specimens and operate automatic analyzers, for example, or they may perform manual tests following detailed instructions. Like technologists, they may work in several different areas of the clinical laboratory or specialize in just one.

Histology technicians cut and stain tissue specimens for microscopic examination by pathologists and phlebotomists and draw and test blood. They usually work under the supervision of medical technologists or laboratory managers.

Work Environment

Hours and other working conditions vary according to the size and type of employment setting. In large hospitals or in commercial laboratories that operate continuously, workers are hired specifically for the day, evening, or night shift. Weekend or holiday work may be required because these laboratories operate 365 days a year. Some smaller laboratories also operate 24 hours a day. Laboratory personnel in small facilities are likely to work on rotating rather than regular shifts; they may work the evening or weekend shift one week, and the day shift the following week. In some facilities, laboratory personnel are required to be on call (available in case of emergency) several nights a week.

Clinical laboratory personnel are trained to work with infectious specimens. It is of the utmost importance that they handle specimens properly to ensure that neither staff nor other test specimens become contaminated by disease-causing organisms. When they follow proper methods of control and sterilization, few hazards of infection exist.

Laboratories generally are well lighted and clean. At times, unpleasant odors may be present.

Laboratory workers may spend much time on their feet. The work can create emotional as well as physical stress because treatment options often depend on quick and accurate analysis of laboratory specimens.

Employment Opportunities

Laboratory roles are based on a career ladder of academic and technical components. Individuals interested in a medical laboratory career may direct their goals to one of many levels of education. Laboratory personnel may advance by acquiring additional education and/or technical experience, beginning with the medical laboratory technician program and progressing to a technologist or specialist.

Critical to high-quality health care is the assurance that individuals performing laboratory tests are able to carry out their responsibilities in a proficient manner. Therefore, laboratory personnel of demonstrated competence are of prime importance.

Most recently, clinical laboratory technologists and technicians held about 295,000 jobs. About half worked in hospitals. The remainder worked in independent laboratories, physicians' offices, clinics, HMOs, public health agencies, pharmaceutical firms, and research institutions.

Educational and Legal Requirements

The usual requirement for a beginning job as a medical technologist is a bachelor's degree with a major in medical technology or in one of the life sciences. It is also possible to qualify through on-the-job experience, specialized training, or a combination of the two.

Bachelor's degree programs in medical technology include substantial coursework in chemistry, biological sciences, microbiology, and mathematics, with the final component of coursework devoted to acquiring the knowledge and skills used in the clinical laboratory. In addition to basic science, many programs offer or require coursework in management, business, and computer applications. Programs leading to a master's degree in medical technology and related clinical laboratory sciences provide training for specialized areas of laboratory work or teaching, administration, or research.

The Clinical Laboratory Improvement Act (CLIA) requires technologists who perform certain highly complex tests to have at least an associate's degree. Licensure and certification are methods of assuring the skill and competence of workers. Licensure refers to the process by which a government agency authorizes individuals

to engage in a given occupation and use a particular job title. Some states require laboratory personnel to be licensed or registered.

Programs in medical technology are offered by colleges and universities as well as by hospitals. Hospital programs generally are affiliated with colleges or universities and lead to a bachelor's degree, although a few hospital programs require a bachelor's degree for entry.

Many college graduates choose to focus on one field rather than rotating through all laboratory departments. The categories available for certification include blood banking, chemistry, hematology, histotechnology, immunology, and microbiology.

The *histologic technician* prepares portions of body tissues for microscopic examination, freezes and cuts tissues, mounts them on slides, and stains them with dyes to make details visible under the microscope.

Skilled *cytotechnologists* in pathology laboratories screen human cell samples under the microscope for early signs of cancer. The expert eyes of the cytotechnologist trace clues to disease in the delicate patterns of the cytoplasm and nucleus that are stained with special dyes. The work requires patience, precision, and the ability to work alone with minimal supervision.

Nuclear medicine technologists work in a clinical or radionuclide laboratory. These specialized facilities deal with the administration of radionuclides for the purpose of detecting disease in the body. They operate imaging devices to perform tests that require the use of radionuclides for diagnoses and operate instruments used in the quantification of radioactivity. They also have the responsibility of preparing radiopharmaceuticals for injection, maintaining quality control of all equipment, and providing for the safe storage and disposal of radioactive material.

Many universities offer advanced degrees in medical technology and related clinical laboratory sciences for technologists who plan to specialize in a certain area of laboratory work or in teaching, administration, or research.

Medical and clinical laboratory technicians generally have either an associate's degree from a community or junior college or a certificate from a hospital, vocational or technical school, or from one of the armed forces. A few technicians learn their skills on the job.

Persons interested in a clinical laboratory career should be careful about selecting an educational program. Prospective employers—hospitals and independent laboratories—may have preferences

as to program accreditation. Educational programs should be able to provide information about the kinds of jobs obtained by graduates, educational costs, the length of time the educational program has been in operation, instructional facilities, and faculty qualifications.

Nationally recognized accrediting agencies in clinical laboratory science include the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), the Commission on Accreditation of Allied Health Education Programs (CAAHEP), and the Accrediting Bureau of Health Education Schools (ABHES). The NAACLS has fully accredited 288 programs and approved 249 programs providing education for medical and clinical laboratory technologists, histologic technicians, and medical and clinical laboratory technicians. The ABHES accredits training programs for medical and clinical laboratory technicians.

Some states require laboratory personnel to be licensed or registered. Information on licensure is available from state departments of health or boards of occupational licensing. Certification is a voluntary process by which a nongovernmental organization, such as a professional society or certifying agency, grants recognition to an individual whose professional competence meets its prescribed standards.

Widely accepted by employers in the health industry, certification by a nongovernmental organization such as a professional society is a prerequisite for some jobs and often is necessary for career advancement. Such agencies that certify medical laboratory technologists and technicians include the Board of Registry of the American Society of Clinical Pathologists, the American Medical Technologists, and the Credentialing Commission of the International Society for Clinical Laboratory Technology. These agencies have different requirements for certification and different organizational sponsors. In conducting certification activities, the Board of Registry prepares standards that ensure competence of medical laboratory personnel, develops and administers appropriate examinations for measurement of competence, and develops and uses appropriate scoring procedures.

Accuracy, dependability, and the ability to work under pressure are important personal characteristics for clinical laboratory personnel. Close attention to detail is essential because small differences or changes in tests, substances, or numerical readouts can be critically important for patient care. Manual dexterity and normal

color vision are highly desirable. With the widespread use of automated laboratory equipment, mechanical, electronic, and computer skills are especially important. In addition, technologists in particular are expected to be good at problem solving and to have strong interpersonal communication skills.

Technologists may advance to supervisory positions in laboratory work or become chief medical technologists or laboratory managers in a large hospital. Manufacturers of home diagnostic testing kits and laboratory equipment and supplies seek experienced technologists to assist in product development, marketing, and sales. Manufacturers value the knowledge and hands-on experience that medical technologists bring to the firm, and the shift out of the laboratory to product sales and development offers excellent opportunities for career advancement. Graduate education in medical technology or one of the biological sciences, chemistry, management, or education usually speeds advancement. A doctorate is needed to become a laboratory director, although federal regulation allows directors of moderate-complexity laboratories to have either a master's degree or a bachelor's degree combined with the appropriate amount of training and experience. Technicians can advance to positions as technologists through additional education and experience.

Employment Trends

Employment of clinical laboratory workers is expected to grow about as fast as the average for all occupations through 2008, as the volume of laboratory tests increases with population growth and the development of new types of tests. Hospitals and independent laboratories have recently undergone considerable consolidation and restructuring, which should allow them to boost productivity and allow the same number of personnel to perform more tests than was previously possible. Consequently, competition for jobs has increased, and individuals may now have to spend more time seeking employment than they did in the past.

Technological advances will continue to have two opposing effects on employment through 2008. New, increasingly power-

ful diagnostic tests will encourage additional testing and spur employment. Conversely, advances in laboratory automation and the introduction of simple tests, which make it possible for each worker to perform more tests, should slow growth in this area. Research and development efforts are targeted at simplifying routine testing procedures, so nonlaboratory personnel, physicians, and patients, in particular, can perform tests now done in laboratories. In addition, automation may be used to prepare specimens, a job traditionally done by technologists and technicians.

Although significant, growth will not be the only source of opportunities for clinical laboratory personnel. As in most occupations, many openings will result from the need to replace workers who transfer to other occupations, retire, or stop working for some other reason.

Earnings

Median annual earnings of medical and clinical laboratory technologists were \$40,510, according to the most recent data. The middle 50 percent earned between \$34,220 and \$47,460. The lowest 10 percent earned less than \$29,240, and the highest 10 percent earned more than \$55,560. Median annual earnings in the industries employing the largest numbers of medical and clinical laboratory technologists were as follows:

Hospitals	\$40,840
Medical and dental laboratories	39,780
Offices and clinics of medical doctors	38,850

Median annual earnings of medical and clinical laboratory technicians were \$27,540. The middle 50 percent earned between \$22,260 and \$34,320. The lowest 10 percent earned less than

\$18,550, and the highest 10 percent earned more than \$42,370. Median annual earnings in the industries employing the largest numbers of medical and clinical laboratory technicians were as follows:

Hospitals	\$28,860
Colleges and universities	27,810
Offices and clinics of medical doctors	27,180
Medical and dental laboratories	25,250
Health and allied health services, not elsewhere classified	24,370

According to the American Society for Clinical Pathology, median hourly pay of staff clinical laboratory technologists and technicians varied by specialty as follows:

<i>Specialty</i>	<i>Beginning</i>	<i>Average</i>	<i>Top</i>
Cytotechnologist	\$16.70	\$21.30	\$24.00
Histotechnologist	13.90	18.00	19.90
Medical technologist	14.00	17.90	20.50
Histologic technician	12.00	15.30	17.30
Medical laboratory technician	11.40	14.00	16.30
Phlebotomist	8.10	9.90	11.80

Related Occupations

Clinical laboratory technologists and technicians analyze body fluids, tissues, and other substances using a variety of tests. Similar or related procedures are performed by analytical, water purification, and other chemists; science technicians; crime laboratory analysts; food testers; and veterinary laboratory technicians.

Additional Information

Career and certification information is available from:

- American Society of Clinical Pathologists, Board of Registry, P.O. Box 12270, Chicago, IL 60612. Internet: <http://www.ascp.org/bor>.
- American Medical Technologists, 710 Higgins Rd., Park Ridge, IL 60068-5765. Internet: <http://www.amt1.com>.
- American Society of Cytopathology, 400 West 9th St., Suite 201, Wilmington, DE 19801.
- International Society for Clinical Laboratory Technology, 917 Locust St., Suite 1100, St. Louis, MO 63101-1413.

For more information on clinical laboratory careers, write to:

- American Society for Clinical Laboratory Science, 7910 Woodmont Ave., Suite 530, Bethesda, MD 20814.
- American Association of Blood Banks, 8101 Glenbrook Rd., Bethesda, MD 20814-2749.

For a list of accredited and approved educational programs for clinical laboratory personnel, write to:

- National Accrediting Agency for Clinical Laboratory Sciences, 8410 W. Bryn Mawr Ave., Suite 670, Chicago, IL 60631.

For a list of training programs for medical and clinical laboratory technicians accredited by the Accrediting Bureau of Health Education Schools, write to:

- Accrediting Bureau of Health Education Schools, 803 West Broad St., Suite 730, Falls Church, VA 22046. Internet: <http://www.abhes.org>.

For information about a career as a medical and clinical laboratory technician and schools offering training, contact:

- National Association of Health Career Schools, 2301 Academy Dr., Harrisburg, PA 17112.

Chapter 25



Health Information Personnel

Key Terms

Health information personnel	Health information technician
Diagnosis and treatment plan	Code
Symptoms and response	Diagnosis-related groupings (DRGs)
Documentation	Tumor registrar
Insurance claims	Accredited record technician (ART)
Medicare reimbursement	Medical transcriptionist
Assessments	Medical (health science) librarian
Health information administrator	
Statistics	

Providing and Preserving Essential Information

Providing and preserving information of ethical, scientific, and legal value to the appropriate professional personnel is one of the most valuable aspects of health care. Managing an information system that meets medical, administrative, ethical, and legal requirements involves the teamwork of administrators, technicians, transcriptionists, and medical librarians, collectively known as *health information personnel*.

The medical record is the centerpiece of the health information system because it contains the entire history of each patient who receives health care. A medical record—a permanent document of the history and progress of one person's illness or injury—is made to preserve information of medical, scientific, legal, and planning value. It is a compilation of observations and findings recorded by the patient's physician and other professional members of the medical team. The entries and reports originate at various points in the hospital, clinic, nursing home, health center, or other health care facility. Through a network of communications systems they are entered in the individual patient's record. This vital medical profile constitutes the patient's unique medical history.

Just as schools and colleges keep transcripts of grades and employers maintain personnel records, doctors and hospitals set up

a permanent file for every patient they treat. This file is known as the medical record or chart. It includes the patient's medical history, results of physical examinations, reports of x-ray and laboratory tests, *diagnosis and treatment plans*, doctors' orders and notes, and nurses' notes.

The medical record shows what the patient's *symptoms* were, what tests were ordered, and how the patient *responded* to treatment. Accurate and orderly records are essential for clinical purposes. However, medical records have other important uses as well. They provide background and *documentation for insurance claims* and *Medicare reimbursement*, legal actions, professional review of treatment and medications prescribed, and training of health professions personnel. Medical records are used for research and planning purposes. They provide data for clinical studies, evaluations of the benefits and costs of various medical and surgical procedures, and *assessments* of community health needs.

Health Information Administrators

Work Description

Directing and controlling the activities of the medical record department is the *health information administrator*, whose job it is to develop systems for documenting, storing, and retrieving medical information. Administrators train and supervise the medical record staff. They are responsible for compiling *statistics* required by federal and state agencies, assist the medical staff in evaluations of patient care or research studies, and may be required to testify in court about records and procedures of recordkeeping.

Recent changes in the way hospitals are paid for the care they provide have thrust medical records into the limelight in most hospitals. Increasingly, medical record administrators are viewed as key members of the management team, and they work closely with the finance department to monitor hospital spending patterns.

As part of the management team, health administrators establish and implement policies, objectives, and procedures for their

department, evaluate personnel and work, develop reports and budgets, and coordinate activities with other managers and work closely with physicians.

Work Environment

Most health information administrators work in pleasant and comfortable offices, but they may work long hours if they are called in to help solve unexpected problems that arise. Those who work at computers for prolonged periods may experience muscle pain and eyestrain.

Employment Opportunities

Prospects for employment are expected to grow faster than average through 2008. Approximately one-half of all available positions are in hospitals. The remainder are spread between large medical group practices, managed care, multifacility nursing corporations, and consulting firms.

Educational and Legal Requirements

The minimum educational program for a registered record administrator is a bachelor's degree in health information or medical record administration. Post-bachelor's degrees usually require one year. The preprofessional curriculum includes studies in the humanities and behavioral, biological, and physical sciences. The professional curriculum covers medical terminology, medical care organizations, disease classifications, organization, supervision, health care statistics, and principles of law, as well as advanced data processing systems.

Earnings

Earnings of health information administrators vary by type and size of the facility as well as by the level of responsibility. Salaries also vary according to geographic region. Median annual earnings were \$56,370 according to the latest statistics.

Related Occupations

Health information administrators have training and experience in both health sciences and management. Other occupations requiring knowledge of both fields include hospital and nursing home administrators, public health directors, health agency directors, clinical laboratory workers, nursing services, physical therapy, rehabilitation services, radiology, respiratory therapy, and outpatient services administrators.

Additional Information

Information on careers in health information management may be obtained from:

- American Health Information Management Association, 233 N. Michigan Avenue, Suite 2150, Chicago, IL 60601. Internet: <http://www.ahima.org>.

Health Information Technicians

Work Description

Every time health care personnel treat a patient, they record what they observed and how the patient was treated medically. This record includes information that the patient provides concerning his or her symptoms and medical history, results of examinations, reports of x rays and laboratory tests, diagnoses, and treatment plans. *Health information technicians* organize and evaluate these records for completeness and accuracy.

Health information technicians, who may also be called medical record technicians, begin to assemble patients' health information by first making sure that the initial medical charts are complete. They ensure that all forms are completed and properly identified and signed, and that all necessary information is in the computer. Sometimes they talk to physicians or others to clarify diagnoses or get additional information.

Technicians assign a *code* to each diagnosis and procedure. They consult classification manuals and also rely on their

knowledge of disease processes. Technicians then use a software program to assign the patient to one of several hundred *diagnosis-related groups* (DRGs). The DRG determines the amount the hospital will be reimbursed if the patient is covered by Medicare or other insurance programs that use the DRG system. Technicians who specialize in coding are called health information coders, medical record coders, coder/abstractors, or coding specialists. In addition to the DRG system, coders use other coding systems, such as those geared toward ambulatory settings.

Technicians also use computer programs to tabulate and analyze data to help improve patient care or control costs, for use in legal actions, or in response to surveys. *Tumor registrars* compile and maintain records of patients who have cancer to provide information to physicians and for research studies.

Health information technicians' duties vary with the size of the facility. In large to medium facilities, technicians may specialize in one aspect of health information, or supervise health information clerks and transcribers while a health information administrator manages the department. In small facilities, an accredited health information technician sometimes manages the department.

Work Environment

Medical record personnel generally work a standard 40-hour week. Some overtime may be required. In hospitals where medical record departments are open 18 to 24 hours a day, seven days a week, medical record personnel work on day, evening, and night shifts. Part-time work is generally available.

This is one of the few health occupations in which there is little or no physical contact with patients. The work environment is usually pleasant and comfortable, but some aspects of the job can be stressful. The utmost accuracy is essential, which demands concentration and close attention to detail. The emphasis on accuracy can cause fatigue and mental strain. Medical record technicians who work at video display terminals for prolonged periods may experience eyestrain and musculoskeletal pain.

Employment Opportunities

Most recently, health information technicians held about 92,000 jobs. About two of five of the jobs were in hospitals. Most of the remainder were in medical group practices, HMOs, nursing homes, clinics, and other facilities that deliver health care.

In addition, insurance firms, accounting firms, and law firms that specialize in health matters employ medical record technicians to tabulate and analyze data from medical records. Public health departments hire technicians to supervise data collection from health care institutions and to assist in research. Manufacturers of medical record systems, services, and equipment employ them to develop and market their products.

Some medical record technicians provide services to nursing homes and physicians' offices as consultants. Other self-employed record technicians may specialize in coding, record copy services, or medical transcription—the typing of physicians' records and notes from dictating or recording equipment or, occasionally, from written notes.

Employment Opportunities

Health information technicians are projected to be one of the 20 fastest-growing occupations over the forecast period. Most technicians will be employed by hospitals, but job growth will be faster in offices and clinics of physicians, nursing homes, and home health agencies.

Educational and Legal Requirements

Medical record technicians entering the field usually have formal training in a two-year associate's degree program offered at community and junior colleges. Courses include medical terminology and diseases, anatomy and physiology, legal aspects of medical records, coding and abstraction of data, statistics, databases, quality assurance methods, and computer training as well as general education. High school students can improve their chances of

acceptance into a health information education program by taking courses in biology, chemistry, health, and especially computer training.

Most employers prefer to hire *accredited record technicians* (ARTs). Accreditation is obtained by passing a written examination offered by the American Health Information Management Association (AHIMA). To take the examination, a person must be a graduate of a two-year associate's degree program accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) of the American Medical Association. Technicians who have received training in non-CAAHEP accredited programs or on the job are not eligible to take the examination. In 1998, CAAHEP accredited 168 programs for health information technicians. Technicians who specialize in coding may also obtain voluntary certification.

Experienced health information technicians usually advance in one of two ways—by specializing or by managing. Many senior health information technicians specialize in coding—particularly Medicare coding—or in tumor registry.

In large health information departments, experienced technicians may advance to section supervisor, overseeing the work of the coding, correspondence, or discharge sections, for example. Senior technicians with ART credentials may become director or assistant director of a health information department in a small facility. However, in large institutions, the director is typically a health information administrator, with a bachelor's degree in health information administration.

Employment Trends

Job prospects for formally trained technicians should be very good. Employment of health information technicians is expected to grow much faster than the average for all occupations through 2008, due to rapid growth in the number of medical tests, treatments, and procedures that will be increasingly scrutinized by third-party payers, regulators, courts, and consumers.

Hospitals will continue to employ a large percentage of health information technicians, but growth in this employment sector will

not be as fast as in other areas. Increasing demand for keeping detailed records in offices and clinics of physicians should result in fast employment growth, especially in large group practices. Rapid growth is also expected in nursing homes and home health agencies.

Earnings

According to the latest information, median annual earnings of health information technicians were \$22,750. The middle 50 percent earned between \$18,700 and \$28,590 per year. The lowest 10 percent earned less than \$15,710 and the highest 10 percent earned more than \$35,170 per year. Median annual earnings in the industries employing the largest number of health information technicians were as follows:

Hospitals	\$23,760
Nursing and personal care facilities	23,540
Offices and clinics of medical doctors	21,090

Related Occupations

Health information technicians need a strong clinical background to analyze the contents of medical records. Other occupations requiring knowledge of medical terminology, anatomy, and physiology without directly touching the patient are medical secretaries, medical transcriptionists, medical writers, and medical illustrators.

Additional Information

Information on careers in health information technology, including a list of CAAHEP-accredited programs, is available from:

- American Health Information Management Association, 233 N. Michigan Ave., Suite 2150, Chicago, IL 60601. Internet: <http://www.ahima.org>.

Medical Transcriptionists

Work Description

Medical transcriptionists translate and edit recorded dictation by physicians and other health care providers regarding patient assessment and treatment. They use headsets and transcribing machines to listen to recordings made by physicians and other health care professionals. These workers transcribe a variety of medical reports about emergency room visits, diagnostic imaging studies, operations, chart reviews, and final summaries.

To understand and accurately transcribe dictated reports into a format that is clear and comprehensible for the reader, the medical transcriptionist must understand the language of medicine, anatomy and physiology, diagnostic procedures, and treatment. They also must be able to translate medical jargon and abbreviations into their expanded forms. After reviewing and editing for grammar and clarity, the medical transcriptionist transcribes the dictated reports and returns them in either printed or electronic form to the dictator for review and signature, or correction. These reports eventually become a part of the patient's permanent file. (Medical secretaries may also transcribe as part of their job.)

Work Environment

The majority of medical transcriptionists is employed in comfortable settings. They usually work in hospitals, doctors' offices, or medical transcription services. An increasing number of court reporters and medical transcriptionists work from home-based offices as subcontractors for law firms, hospitals, and transcription services.

The work presents few hazards. Sitting in the same position for long periods can be tiring, however, and workers can suffer wrist, back, neck, or eye problems due to strain and risk incurring repetitive motion injuries such as carpal tunnel syndrome. Also, the pressure to be accurate and fast can prove stressful.

Most medical transcriptionists work a standard 40-hour week, although about one in four works part-time. A substantial number of medical transcriptionists are self-employed, which may result in irregular working hours.

Employment Opportunities

Employment of medical transcriptionists is projected to grow about as fast as the average for all occupations through 2008. Rapid growth among medical transcriptionists will result from a decline in the number of stenographers.

About one in four medical transcriptionists works for a hospital or physician office, reflecting these facilities' concentration in the health services. The remainder are primarily self-employed or provide temporary-help supply services.

Demand for medical transcriptionists is expected to increase due to rapid growth in health care industries, which in turn will be spurred by a growing and aging population. Advancements in voice recognition technology are not projected to reduce the need for medical transcriptionists because these workers will continue to be needed to review and edit drafts for accuracy. Moreover, growing numbers of medical transcriptionists will be needed to amend patients' records, edit for grammar, and discover discrepancies in medical records. Job opportunities should be the best for those who earn an associate degree or certification from the American Association for Medical Transcription.

Education and Legal Requirements

Employers prefer to hire transcriptionists who have completed postsecondary training in medical transcription, which is offered by many vocational schools and community colleges. Completion of a two-year associate degree program—including coursework in anatomy, medical terminology, medicolegal issues, and English grammar and punctuation—is highly recommended. Many of these programs include supervised on-the-job experience. The American Association for Medical Transcription awards a voluntary designation, Certified Medical Transcriptionist (CMT), to those who earn passing scores on its written and practical examinations. As in many other fields, certification is recognized as a sign of competence in medical transcription.

For medical transcriptionist positions, understanding medical terminology is essential. Good English grammar and punctuation skills are required, as well as familiarity with personal computers

and word processing software. Good listening skills are also necessary, because some doctors and health care professionals speak English as a second language.

Earnings

The most recent data show that medical transcriptionists had median hourly earnings of \$12.15. The middle 50 percent earned between \$10.07 and \$14.41. The lowest 10 percent earned less than \$8.66, and the highest 10 percent earned more than \$16.70. Median hourly earnings in the industries employing the largest numbers of medical transcriptionists were as follows:

Offices and clinics of medical doctors	\$12.25
Hospitals	12.14
Mailing, reproduction, and stenographic services	11.47

Compensation methods for medical transcriptionists vary. Some are paid based on the number of hours they work or on the number of lines they transcribe. Others receive a base pay per hour with incentives for extra production. Large hospitals and health-care organizations usually prefer to pay for the time an employee works. Independent contractors and employees of transcription services almost always receive production-based pay.

Related Occupations

A number of other workers type, record information, and process paperwork. Among these are administrative assistants, bookkeepers, receptionists, secretaries, and human resource clerks. Other workers who provide medical support include medical assistants and medical record technicians.

Additional Information

For information on a career as a medical transcriptionist, contact:

- American Association for Medical Transcription, P.O. Box 576187, Modesto, CA 95357. Internet: <http://www.aamt.org>.

Medical Librarians

Work Description

Medical, or health science, librarians provide essential services to professional staff and personnel in medicine, dentistry, nursing, pharmacy, the allied health professions, and other related technologies. Because the health field and related fields are growing rapidly, professional staff need quick and efficient access to large volumes of information and materials so as to keep abreast of developments, new procedures and techniques, and other relevant data. The various data are used in education and training programs, in exchange-of-information activities of different health professions, and in biomedical research. Health science librarians make this information available to those who need it, using knowledge of both library science and health science.

Depending on the size of the facility in which they work, health science librarians may take charge of an entire library or may be assigned to one or more specific functions. They select and order books, journals, and other materials and classify and catalog acquisitions to allow their easy retrieval. Other duties include preparing guides to reference materials, compiling bibliographies, and selecting and acquiring films and other audiovisual materials.

Readers and researchers frequently call on the specialized skills of the librarian to track down information on a particular subject. The material may be bound in obscure documents or scattered in many places, requiring detective work to locate it. If the document is in another language, the librarian may be called on to obtain a translation. Frequently, the librarian is asked to compile bibliographies or provide a comprehensive review or summary of a particular subject.

Aside from serving in person, the librarian also responds to mail (including e-mail in some cases) or phone inquiries. Success in handling these inquiries depends largely on the librarian's skill. Librarians may have only very general knowledge of medicine, but they must know how and where to locate all types of information on short notice.

In hospitals, the services offered by the medical library depend on such factors as whether the hospital conducts research and training and the categories of illness treated. Some hospitals have separate libraries: medical, nursing school (if one exists), and patients' libraries. More and more, however, these are being grouped together under the direction of one chief librarian, with assistants in charge of the separate services.

The librarian also plays an important role in the hospital's rehabilitation service, and librarians serving patients provide book-cart services, develop programs of interest for ambulatory patients, and visit new patients to learn about their reading interests.

Work Environment

In addition to hospitals, medical librarians work in schools of medicine, nursing, dentistry, and pharmacy; research institutes; pharmaceutical houses and similar industries; health departments; professional societies; and voluntary health agencies. Medical libraries are found in numerous locations throughout the country but tend to be concentrated in or near population centers. Individual size and working conditions vary greatly from library to library. For instance, hospital libraries may range from a staff size of 1 to slightly fewer than 100. In ill-equipped offices, there may be risks of eyestrain, backache, and carpal tunnel syndrome. Nevertheless, surroundings are almost always pleasant and free of hazards or unusual environmental working conditions.

Employment Opportunities

Most recently, librarians held about 149,000 jobs. Most were in school and academic libraries; others were in public and special libraries. A small number of librarians worked for hospitals and religious organizations. Others worked for governments. Entre-

preneurial librarians sometimes start their own consulting practices, acting as free-lance librarians or information brokers and providing services to other libraries, businesses, or government agencies.

Some job openings for librarians will stem from projected slower-than-average employment growth through 2008. Replacement needs will account for more job openings over the next decade, as some librarians reach retirement age. Slower than average employment growth, coupled with an increasing number of master's degree in library science (MLS) graduates, will result in more applicants competing for fewer jobs. Applicants for librarian jobs in large cities or suburban areas will face competition, while those willing to work in rural areas should have better job prospects.

Educational and Legal Requirements

An MLS is necessary for librarian positions in most public, academic, and special libraries and in some school libraries. The federal government requires an MLS or the equivalent in education and experience. Many colleges and universities offer MLS programs, but employers often prefer graduates of the approximately 50 schools accredited by the American Library Association. Most MLS programs require a bachelor's degree; any liberal arts major is appropriate preparation for such graduate work.

Most MLS programs take one year to complete, but some take two. A typical graduate program includes courses in the foundations of library and information science, including the history of books and printing, intellectual freedom and censorship, and the role of libraries and information in society. Other basic courses cover material selection and processing, the organization of information, reference tools and strategies, and user services. Courses are adapted to educate librarians to use new resources brought about by advancing technology such as on-line reference systems, Internet search methods, and automated circulation systems. Computer-related coursework is an increasingly important part of an MLS degree.

An MLS provides general preparation for library work, but some individuals specialize in a particular area. The minimum qualifications for medical librarians are as follows:

- A master's of library and information science from an American Library Association-accredited school

- Strong oral and written communication skills
- Strong interpersonal skills
- Strong computer skills

Librarians participate in continuing training once they are on the job to keep abreast of new information systems brought about by changing technology.

Earnings

Salaries of librarians vary according to the individual's qualifications and the type, size, and location of the library. Librarians with primarily administrative duties often have greater earnings. Median annual earnings of librarians were \$41,700. The middle 50 percent earned between \$32,840 and \$52,110. The lowest 10 percent earned less than \$25,030 and the highest 10 percent earned more than \$62,990 per year.

The Medical Library Association reports that the average starting salary was \$31,066 in 1998. The overall average salary for medical librarians in 1998 was \$45,016. Library directors can earn between \$47,689 and \$175,854.

Related Occupations

Librarians play an important role in the transfer of knowledge and ideas by providing people with access to the information they need and want. Jobs requiring similar analytical, organizational, and communicative skills include physicians, nurses, health educators, and other allied health care professionals, administrators, and programmers and information technology specialists.

Additional Information

Information on librarianship, including information on scholarships or loans, is available from the American Library Association. For a listing of accredited library education programs, check its Web site:

- American Library Association, Office for Human Resource Development and Recruitment, 50 East Huron St., Chicago, IL 60611. Internet: <http://www.ala.org>.

For information on employment opportunities as a health science librarian, scholarship information, credentialing information, and a list of MLA-accredited schools offering programs in health sciences librarianship, contact:

- Medical Library Association, 6 N. Michigan Ave., Suite 300, Chicago, IL 60602. Internet: <http://www.mlanet.org>.

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Chapter 26



Health Services Administration

Key Terms

Programs	Financial viability
Budgets	Associate administrator
Health services (generalist, clinical)	Assistant administrator
Review	Marketing
Organization and coordination	Strategic planning
Executive	Governing board
Chief executive officer (CEO)	Policies
Negotiation	Philosophy
Leadership	

The Need for Professional Management

Effective management of health care organizations and of the considerable resources at their disposal requires competent managers. Like their counterparts in any organization, health services managers are responsible for facilities, services, *programs*, staff *budgets*, and relations with other organizations.

The term “health services manager” encompasses individuals who plan, direct, coordinate, and supervise the delivery of health care. Health services managers include generalists and specialists. *Generalists* manage or help to manage an entire facility or system, whereas specialists are in charge of specific clinical departments or services.

The job of managing a health facility has become highly complex due to the many advances in medical technology and the emergence of dozens of specialty health professions, together with significant changes in consumer expectations, business practices, and health care financing. As a result, the need for professional managers continues to grow.

Clinical managers have more specific responsibilities than generalists do, as well as training and/or experience in a specific clinical area. For example, directors of physical therapy are experienced physical therapists, and most health information and medical record administrators have a bachelor’s degree in health information or medical record administration. These managers establish

and implement policies, objectives, and procedures for their departments; evaluate personnel and work; develop reports and budgets; and coordinate activities with other managers.

Another aspect of professional management is the need to manage the extensive oversight and scrutiny to which health facilities are subject. Both past performance and plans for the future are subject to *review* by a variety of groups and organizations, including consumer groups, government agencies, professional oversight bodies, insurance companies and other third-party payers, business coalitions, and even the courts. Preparing for inspection visits by observers from regulatory bodies and submitting appropriate records and documentation can be time-consuming as well as technically demanding.

Health Services Managers

Work Description

Health services manager is an inclusive term for individuals in many different positions who plan, *organize*, and *coordinate* the delivery of health care. Hospitals provide more than half of all jobs in this field. Other places that employ health services managers include medical group practices, outpatient clinics, HMOs, nursing homes, hospices, home health agencies, rehabilitation centers, community mental health centers, emergency care centers, diagnostic imaging centers, and offices of doctors, dentists, and other health practitioners.

Three functional levels of administration are found in hospitals and other large facilities—*executive*, internal management, and specialized staff. The *chief executive officer (CEO)* provides overall management direction, but also is concerned with community outreach, planning, policy making, response to government agencies and regulations, and *negotiation*. The job often includes speaking before civic groups, promoting public participation in health programs, and coordinating the activities of the organization with those of government or community agencies. Institutional planning is an increasingly important responsibility of chief administrators, who must assess the need for services, personnel, facilities, and equipment and recommend such changes as

shutting down a maternity ward, for example, or opening an outpatient clinic. Chief administrators need *leadership* ability as well as technical skills to respond effectively to community requirements for health care while at the same time satisfying demand for *financial viability*, cost containment, and public and professional accountability. Within a single institution such as a community hospital, the health care administrator is directly responsible to a board of trustees, community leaders who are voted into office to determine broad policies and objectives for the hospital.

Day-to-day management, particularly in large facilities, may be the responsibility of one or more *associate* or *assistant administrators*, who work with service unit managers and staff specialists. Depending on the size of the facility, associate or assistant administrators may be responsible for budget and finance; human resources, including personnel administration, education, and in-service training; information management; and direction of the medical, nursing, ancillary services, housekeeping, physical plant, and other operating departments. As the health care system becomes more specialized, skills in financial management, *marketing*, *strategic planning*, systems analysis, and labor relations will be needed as well.

Hospital and nursing home administration differ in important respects. Hospitals are complex organizations, housing as many as 30 highly specialized departments such as admissions, surgery, clinical laboratory, therapy, emergency medicine, nursing, physical plant, medical records, accounting, and so on. The hospital administrator works with the *governing board* in establishing general *policies* and operating *philosophy* and provides direction to assistant administrators (or vice-presidents, as they may be called) and department heads who carry out those policies. The administrator coordinates the activities of the assistant administrators and department heads to ensure that the hospital runs efficiently, provides high-quality medical care, and recovers adequate revenue to remain solvent or make a profit. Administrators represent the health institution to the community and the state. Nationally, they participate in professional associations such as the American Hospital Association, the American Public Health Association, and the Association of Mental Health Administrators.

Many of the same management skills are needed by nursing home administrators. However, administrative staffs in nursing homes are typically much smaller than those in hospitals. Nursing

home administrators often have only one or two assistants, and sometimes none. As a result, nursing home administrators are involved in detailed management decisions much more than hospital administrators in all but the smallest hospitals. They wear various hats—personnel director, director of finance, director of facilities, admissions director, for example—analyzing data and then making daily management decisions in all of these areas. In addition, because many nursing home residents are long-term, staying for months or even years, administrators must try to create an environment that nourishes residents' psychological, social, and spiritual well-being, as well as tending to their health care needs.

In the growing field of group practice management, managers need to be able to work effectively with the physicians who own the practice. Specific job duties vary according to the size of practice. While an office manager handles the business side in very small medical groups, leaving policy decisions to the physicians themselves, larger groups generally employ a full-time administrator to provide advice on business strategies and coordinate the day-to-day management of the practice.

A group of 10 or 15 physicians might employ a single administrator to oversee personnel matters, billing and collection, budgeting, planning, equipment outlays, advertising, and patient flow, whereas a practice of 40 or 50 physicians would require a chief administrator and several assistants, each responsible for a different area of management. In addition to providing overall management direction, the chief administrator is responsible for ensuring that the practice maintains or strengthens its competitive position. This is no small task, given the rapidly changing nature of the health care environment. Ensuring competitiveness might entail market research to analyze the services the practice currently offers and those it might offer, negotiating contracts with hospitals or other health care providers to gain access to specialized facilities and equipment, or entering into joint ventures for the purchase of an expensive piece of medical equipment such as a magnetic resonance imager.

Managers in HMOs perform all the functions of those in large medical group practices, plus one additional function—that of an insurance company. HMO subscribers pay an annual fee that covers almost all care. HMO managers must establish a comprehensive medical benefits package with enrollment fees low enough to

attract adequate enrollments but high enough to operate successfully. In addition, they may do more work in the areas of community outreach and preventive care than managers of a group practice do. The size of the administrative staff in HMOs varies according to the size and type of HMO.

Some health services managers oversee the activities of a number of facilities in health systems. Such systems may contain both inpatient and outpatient facilities and offer a wide range of patient services.

Work Environment

Health services managers often work long hours. Facilities such as nursing homes and hospitals operate around the clock, and administrators and managers may be called at all hours to deal with emergencies. The job also may include travel to attend meetings or to inspect health care facilities.

Employment Opportunities

Most recently, health services managers held 250,000 jobs. More than half of all jobs were in hospitals. About one in four was in nursing and personal care facilities or offices and clinics of physicians. The rest of these professionals worked mostly in home health agencies, ambulatory facilities run by state and local governments, offices of dentists and other health practitioners, medical and dental laboratories, residential care facilities, and other social service agencies.

Educational and Legal Requirements

Health services managers must be familiar with management principles and practices. A master's degree in health services administration, long-term care administration, health sciences, public health, public administration, or business administration is the standard credential for most generalist positions in this field. However, a bachelor's degree is adequate for some entry-level positions in smaller facilities and for some entry-level positions at the departmental level within health care organizations. In addi-

tion, physicians' offices and some other facilities may accept on-the-job experience as a substitute for formal education.

For clinical department heads, a degree in the appropriate field and work experience may be sufficient for entry, but a master's degree in health services administration or a related field may be required to advance. For example, nursing service administrators are usually chosen from among supervisory registered nurses who have administrative abilities and a graduate degree in nursing or health services administration.

Bachelor's, master's, and doctoral degree programs in health administration are offered by colleges, universities, and schools of public health, medicine, allied health, public administration, and business administration. In 1999, 67 schools had accredited programs leading to a master's degree in health services administration, according to the Accrediting Commission on Education for Health Services Administration.

Some graduate programs seek out students with undergraduate degrees in business or health administration; others prefer students with a liberal arts or health profession background. Candidates with previous work experience in health care may also have an advantage. Competition for entry into these programs is keen, and applicants need above-average grades to gain admission.

The programs usually last between two and three years. They may include as much as one year of supervised administrative experience and coursework in areas such as hospital organization and management, marketing, accounting and budgeting, human resources administration, strategic planning, health economics, and health information systems. Some programs allow students to specialize in one type of facility—hospitals, nursing homes, mental health facilities, HMOs, or medical groups, for example. Other programs encourage a generalist approach to health administration education.

New graduates with master's degrees in health services administration may start as department managers or in staff positions. The level of the starting position varies with the experience of the applicant and the size of the organization. Hospitals and other health facilities offer postgraduate residencies and fellowships, which are usually staff positions. Graduates from master's degree programs also take jobs in HMOs, large group medical practices, clinics, mental health facilities, multifacility nursing home corporations, and consulting firms.

Graduates with bachelor's degrees in health administration usually begin as administrative assistants or assistant department heads in larger hospitals, or as department heads or assistant administrators in small hospitals or nursing homes.

All states and the District of Columbia require nursing home administrators to have a bachelor's degree, pass a licensing examination, complete a state-approved training program, and pursue continuing education. A license is not required in other areas of health services management.

Health services managers are often responsible for millions of dollars of facilities and equipment and hundreds of employees. To make effective decisions, they need to be open to different opinions and good at analyzing contradictory information. They must understand finance and information systems and be able to interpret data. Motivating others to implement their decisions requires strong leadership abilities. Tact, diplomacy, flexibility, and communication skills are essential, because health services managers spend most of their time interacting with others.

Health services managers advance by moving into more responsible and higher-paying positions, such as assistant or associate administrator, or by moving to larger facilities.

Employment Trends

Employment of health services managers is expected to grow faster than the average for all occupations through 2008 as health services continue to expand and diversify. Opportunities for health services managers should be closely related to growth in the industry in which they are employed. Opportunities will be especially good in home health care, long-term care, and nontraditional health organizations, such as managed care operations and consulting firms—particularly for health services managers who have previous work experience in the health care field and strong business and management skills.

Hospitals will continue to employ the largest number of managers, although the number of jobs will grow slowly compared to other areas. As hospitals continue to consolidate, centralize, and diversify functions, competition will increase at all job levels.

This type of employment will grow the fastest in home health agencies, residential care facilities, and practitioners' offices and clin-

ics. Many services previously provided in hospitals will shift to these sectors, especially as medical technologies improve. Demand for health services managers in medical group practice management will grow as medical group practices become larger and more complex. Health services managers will need to deal with the pressures of cost containment and financial accountability and handle the increased focus on preventive care. They will also become more involved in trying to improve the health of their communities.

Health services managers will also be employed by health care management companies that provide management services to hospitals and other organizations, as well as by specific departments such as emergency, information management systems, managed care contract negotiations, and physician recruiting.

Earnings

According to the latest data, median annual earnings of medical and health service managers were \$56,370. The middle 50 percent earned between \$44,460 and \$72,550 per year. The lowest 10 percent earned less than \$35,210 and the highest 10 percent earned more than \$97,900 per year. Median annual earnings in the industries employing the largest number of medical and health service managers were as follows:

Hospitals	\$60,360
Offices and clinics of medical doctors	53,430
Health and allied services, not elsewhere classified	51,800
Nursing and personal care facilities	51,240

Earnings of health services managers vary by type and size of the facility as well as by level of responsibility. For example, the Medical Group Management Association reported the following median salaries in 2000 for administrators by group practice size:

- Fewer than 7 physicians, \$65,125
- 7 to 25 physicians, \$83,022
- More than 26 physicians, \$96,402.

According to a survey conducted by *Modern Healthcare* magazine, median annual compensation in 2001 for managers of the following clinical departments was as follows:

- Respiratory therapy, \$67,200
- Home health care, \$71,400
- Ambulatory and outpatient services, \$85,200
- Radiology, \$76,500
- Clinical laboratory, \$77,100
- Physical therapy, \$71,400
- Rehabilitation services, \$79,700
- Nursing services, \$113,800
- Salaries also varied according to size of facility and geographic region.

Related Occupations

Health services managers have training or experience in both health and management. Other occupations requiring knowledge of both fields are public health directors, social welfare administrators, directors of voluntary health agencies and health professional associations, and underwriters in health insurance companies.

Additional Information

General information about health administration is available from:

- American College of Healthcare Executives, One North Franklin St., Suite 1700, Chicago, IL 60606. Internet: <http://www.ache.org>.

Information about undergraduate and graduate academic programs in this field is available from:

- Association of University Programs in Health Administration, 730 11th St., NW, Washington, DC 20001-4510. Internet: <http://www.aupha.org>.

For a list of accredited graduate programs in health services administration, contact:

- Accrediting Commission on Education for Health Services Administration, 730 11th St., NW, Washington, DC 20001-4510.

For information about career opportunities in long-term care administration, contact:

- American College of Health Care Administrators, 325 S. Patrick St., Alexandria, VA 22314.

For information about career opportunities in medical group practices and ambulatory care management, contact:

- Medical Group Management Association, 104 Inverness Terrace East, Englewood, CO 80112.

For information about health care office managers, contact:

- Professional Association of Health Care Office Managers, 461 East Ten Mile Rd., Pensacola, FL 32534-9712. Internet: <http://www.pahcom.com>.

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Chapter 27



Federal and State Health Regulators

Key Terms

Federal and state health regulators	Inspection
City, county, district, state, and federal laws	Occupational Safety and Health Administration (OSHA) inspectors
Interpretation and enforcement	Investigations
Environmental health control	Environmental health inspectors (sanitarians)
Environmental hazards	Food inspectors
Consumer safety inspectors and officers	

Government Health and Safety Officers

Federal and state health regulators are responsible for controlling, preserving, or improving environmental conditions so that health, safety, comfort, and well-being are maintained. There are *city, county, district, state, federal*, and other *laws* regarding sanitary standards in food, water supply, garbage and waste disposal, sewage disposal, and housing maintenance. These workers *interpret and enforce* the laws. Within the field of *environmental health control*, they are responsible for the regulation and disposal of hazardous substances and monitoring pollution of water and air quality. New sanitary problems are created as the population increases and as more people move into the cities and suburbs of expanding metropolitan areas. With technical training and experience, regulators are equipped to recognize and anticipate *environmental hazards*. It is part of their responsibility to call these problems to the attention of the government bodies concerned, community leaders, civic groups, and the general public and to make recommendations for solving the problems.

Work Description

Federal and state regulators, usually referred to as inspectors and compliance officers, help to keep workplaces safe, food healthy, and the environment clean. They also ensure that workers' rights

are recognized in a variety of settings. They enforce rules on matters as diverse as health, safety, food quality, licensing, and finance. As the following occupations demonstrate, their duties vary widely, depending on their area of responsibility and level of experience.

Consumer safety inspectors and officers inspect food, feeds, pesticides, weights and measures, biological products, cosmetics, drugs, medical equipment, and radiation-emitting products. Working individually or in teams under a senior inspector, they check on firms that use, produce, handle, store, or market the products that they regulate. They ensure that standards are maintained and respond to consumer complaints by questioning employees, vendors, and others to obtain evidence. Inspectors look for inaccurate product labeling, inaccurate scales, and decomposition or chemical/bacteriological contamination that could result in a product becoming harmful to health. After completing their *inspection*, inspectors discuss their observations with plant managers or business owners to point out areas where corrective measures are needed. They write reports of their findings and compile evidence for use in court if legal action must be taken.

Occupational Safety and Health Administration (OSHA) inspectors serve the Department of Labor as expert consultants on the application of safety principles, practices, and techniques in the workplace. They conduct fact-finding *investigations* of workplaces to determine the existence of specific safety hazards. They may be assigned to conduct safety inspections and investigations and may use technical equipment and sampling and measuring devices and supplies required in the field. These inspectors attempt to prevent accidents by using their knowledge of engineering safety codes and standards, and they may order the suspension of activities that pose threats to workers.

Environmental health inspectors, also called *sanitarians*, work primarily for governments. They analyze substances to identify contamination or the presence of disease and investigate sources of contamination to ensure that food, water, and air meet government standards. They certify the purity of food and beverages produced in dairies and processing plants or served in restaurants, hospitals, and other institutions. Inspectors may find pollution sources through collection and analysis of air, water, or waste samples. When they determine the nature and cause of pollution, they

initiate action to stop it and force the firm or individual who caused the pollutants to pay to clean it up.

Food inspectors ensure that products are fit for human consumption in accordance with federal laws governing the wholesomeness and purity of meat and poultry products. This is accomplished through inspection, which involves a visual examination of the live animal or poultry prior to slaughter, and post-mortem inspection to determine that the product is not contaminated and that sanitation procedures are maintained. Processing food inspectors specialize in processed meat and poultry products, and all other ingredients contained in the final products, including frozen dinners, canned goods, and cured and smoked products. They have the authority to shut a plant down if they encounter a problem that they are unable to resolve.

Work Environment

Inspection and compliance officers work with many different people and in a variety of environments. Their jobs often involve considerable field work, and some inspectors travel frequently. When traveling, they are generally furnished with an automobile or are reimbursed for their travel expenses.

Inspectors may experience unpleasant, stressful, and dangerous working conditions. For example, federal food inspectors work in highly mechanized plant environments near operating machinery with moving parts or with poultry or livestock in confined areas in extreme temperatures and on slippery floors. Their duties often require working with sharp knives, moderate lifting, and walking or standing for long periods of time. Many inspectors work long and often irregular hours. In addition, they may find themselves in adversarial roles when the organization or individual being inspected objects to the process or its consequences.

Employment Opportunities

Most recently, inspectors and compliance officers held about 176,000 jobs. State governments employed 30 percent, the federal government—chiefly the Departments of Defense, Labor, Trea-

sure, and Agriculture—employed 31 percent, and local governments employed 19 percent of these workers. The remaining 20 percent were employed throughout the private sector in education, hospitals, insurance companies, and manufacturing firms.

Inspectors and compliance officers who work for the federal government are employed by a wide range of agencies. Some consumer safety inspectors, for example, work for the U.S. Food and Drug Administration, but the majority work for state governments. Most food inspectors and agricultural commodity graders are employed by the U.S. Department of Agriculture. Many health inspectors work for state and local governments. Compliance inspectors are employed primarily by the Departments of Treasury and Labor on the federal level, but some work for state and local governments. The Department of Defense employs the most quality assurance inspectors. The Environmental Protection Agency employs inspectors to verify compliance with pollution control and other laws. The U.S. Department of Labor and many state governments employ safety and health inspectors, equal opportunity officers, and mine safety and health inspectors. The U.S. Department of the Interior employs park rangers.

Average growth in employment of inspectors and compliance officers is expected through 2008, reflecting the trend of balancing the continuing public demand for a safe environment and quality products against the desire for smaller government and fewer regulations. Additional job openings will arise from the need to replace workers who transfer to other occupations, retire, or leave the labor force for other reasons. In private industry, employment growth will reflect industry growth and the continuing self-enforcement of government and company regulations and policies, particularly among franchise operations in various industries.

Employment of inspectors and compliance officers is seldom affected by general economic fluctuations. Federal, state, and local governments, which employ four-fifths of all inspectors, provide considerable job security.

Educational and Legal Requirements

Because of the diversity of the functions they perform, qualifications for inspector and compliance officer jobs vary widely.

Requirements include a combination of education, experience, and passing scores on written examinations. Many employers, including the federal government, require college degrees for some positions. Experience in the area being investigated is also a prerequisite for many positions.

One example of the qualifications needed for an inspector and compliance officer is that of the environmental health inspector or sanitarian, a position with which health facility personnel are familiar. Environmental health inspectors may have completed a full four-year course of study that meets all of the requirements for a bachelor's degree, and that included or was supplemented by at least 30 semester hours in a science or any combination of sciences directly related to environmental health—for example, sanitary science, public health, chemistry, microbiology, or any appropriate agricultural, biological, or physical science. Alternately, sanitarians may have four years of specialized experience in inspectional, investigational, technical support, or other work that provided a fundamental understanding of environmental health principles, methods, and techniques equivalent to that which would have been gained through a four-year college curriculum or some combination of education and experience as described above. In most states, they are licensed by examining boards.

Other personal qualifications that mark the true professional in any discipline may be applied in this occupation as well. These characteristics include the ability to work effectively with people, a commitment to service, and true concern for the public health and well-being. Prospective students also should have a strong interest in science.

All inspectors and compliance officers are trained in the applicable laws or inspection procedures through some combination of classroom and on-the-job training. In general, people who want to enter this occupation should be responsible and like detailed work. Inspectors and compliance officers should be able to communicate well.

Federal government inspectors and compliance officers whose job performance is satisfactory can advance through their particular career ladder to a specified full-performance level. For positions above this level, usually supervisory positions, advancement is competitive and based on agency needs and individual merit.

Advancement opportunities in state and local governments and the private sector are often similar to those found in the federal government.

Earnings

According to the latest information, the median annual salary of inspectors and compliance officers (other than construction inspectors) was \$36,820. The middle half earned between \$28,540 and \$48,670. The lowest 10 percent earned less than \$22,750 while the highest 10 percent earned more than \$72,280. Inspectors and compliance officers employed by local governments had earnings of \$31,800; those who worked for state governments earned a median annual salary of \$33,700; and those in the federal government earned \$39,900.

In the federal government, the annual starting salaries for inspectors varied from \$25,500 to \$31,200 in 1999, depending on the nature of the inspection or compliance activity. Beginning salaries were slightly higher in selected areas where the prevailing local pay level was higher. Average salaries for selected inspectors and compliance officers in the federal government in nonsupervisory, supervisory, and managerial positions in early 1999 follow:

Environmental protection specialists	\$58,000
Safety and occupational health managers	54,000
Public health quarantine inspectors	52,500
Quality assurance inspectors	50,600
Agricultural commodity graders	41,600
Consumer safety inspectors	37,300
Food inspectors	35,200

Most inspectors and compliance officers work for federal, state, and local governments or in large private firms, most of which generally offer more generous benefits than do smaller firms.

Related Occupations

Inspectors and compliance officers ensure that laws and regulations are obeyed. Others who enforce laws and regulations include construction and building inspectors; fire marshals; federal, state, and local law enforcement professionals; correctional officers; fish and game wardens, aviation safety inspectors, equal opportunity specialists, mine safety and health inspectors, park rangers, and securities compliance examiners.

Additional Information

Information on obtaining a job with the federal government is available from the Office of Personnel Management through a telephone-based system. Consult a telephone directory under U.S. Government for a local number or call (912) 757-3000 or (912) 744-2299 (TDD). Information is also available from an Internet site <http://www.usajobs.opm.gov>.

Information about jobs in federal, state, and local governments as well as in private industry is available from the state employment service.

Environmental Health Technicians and Aides

There is a growing need for environmental health technicians and aides. There is also greater recognition of the fact that these pre-professional students need a career ladder to advance to first-degree professionals (bachelor's degree in science) and to postgraduate levels if they desire. Accredited community colleges, therefore, frequently offer a two-year associate of science degree, which includes the general education courses, and with which students may transfer to a four-year college or university to complete their training. Students interested in pursuing a technician course of study should contact community or junior colleges in their area for specifics.

Chapter 28



Health Education

Key Terms

Special education	Health education programs
Physically and mentally handi- capped	Educational therapist
Emotionally disturbed	Orientation and mobility instructor
Culturally different	Rehabilitation teacher
Mentally gifted and talented	School health educator
Community health educator	Teacher of the visually handicapped
	Itinerant program

The health field offers a variety of career opportunities to persons interested in education—community health education, school health education, educational therapy, and special education. These professions and specialties within them are detailed in this chapter.

Community health education is an expanding field that emphasizes the importance of preventive health care at the community level. As professionals, community health educators use educational skills and a sound knowledge of public health to educate the public about health and disease and what can be done to maintain good health, prevent disease, or secure treatment.

While the community health educator concentrates on the nonschool community, school health educators are concerned with the school environment. Their main concerns are classroom teaching and the factors that influence the knowledge, behavior, attitudes, and practices that affect the health of students.

Educational therapy is another career area of major importance in the health field. Educational therapists work with physically handicapped, emotionally disturbed, geriatric, or otherwise disabled patients in various types of health facilities. Their goal is not only to impart knowledge but also to help patients develop physical capacities and restore a sense of connection with their work and with other people.

Career opportunities are also available for teachers in *special education*. Special education teachers work with pupils who are *physically handicapped, emotionally disturbed, culturally different,*

mentally retarded, or mentally gifted and talented. These students are found in school systems, institutions, hospitals, or rehabilitation centers, and, because of their unusual or extraordinary traits, they need the services that only special education can provide.

A career area that occupies a significant place in the field and presents challenging career possibilities involves the visually handicapped. Professionals in this work provide essential services to blind or visually handicapped persons of all ages and help them function successfully in a sighted world. Among the different types of specialists who work with the visually handicapped are the orientation and mobility instructor, the rehabilitation teacher, and the teacher of the visually handicapped.

Community Health Educators

Work Description

The basic function of *community health educators* is to give people the facts about health, the causes of disease, and methods of prevention so they will act for their own well-being and that of their families.

Health educators seldom talk directly to the people they hope to influence. They work instead through a wide variety of intermediaries in the community—teachers, club leaders, health officers, public health nurses, trade-union program directors, scout leaders, and community group leaders. Through these intermediaries they reach a much larger audience than they would alone, because these people have a personal relationship with those being educated and are therefore likely to have a greater influence on them.

Health educators meet with groups and work out *health education programs* to include in regular daily activities. They also prepare or direct the preparation of guides and materials such as leaflets, films, exhibits, slides, and posters.

Health educators also work with the mass media (newspapers, magazines, radio and television, trade newspapers, and organizational newsletters). They prepare or direct the prepara-

tion of appropriate articles, features, and photographs for use by the media, or work directly with writers, editors, or program directors. As a result, the influence of community health educators is extended to vast audiences that could not be reached otherwise. Contact with the public through the media is admittedly less desirable than personal contact. However, in health education, as in other educational efforts, many methods are used to complement and reinforce each other for a cumulative effect.

The ultimate goal of health education is to persuade the person being educated to take the necessary steps for preservation of health or safety, but this goal is not always achieved. Many smokers, for example, continue to smoke no matter how many times they have had the danger pointed out to them. Some people do not use their auto safety belts despite the repeated messages on the importance of using them. The dangers of alcohol and drug abuse are being repeatedly drilled into the minds of young and old, yet alcoholism and drug addiction continue to increase. Considerable health education is offered to the populations of inner cities, yet much of it is ignored.

Educators have recognized that it is not enough just to point out the hazards of a particular practice or the advantages of another. There are many obstacles to perception and appropriate action, including emotional resistance, language barriers, or psychological blocks. Whatever the obstacles are, it is the job of the health educator to identify them and devise methods to overcome or sidestep them. Otherwise, health education will be ineffective or will not take place, because health education is meant to be more than information—it is meant to motivate effective action.

To overcome resistance, health educators use various techniques of investigation—interviews, surveys, and community studies—together with insights gained from psychology, sociology, and anthropology.

A basic tenet of health educators is that final decisions about health practices should be made by the individuals involved. Nevertheless, educators accept responsibility for providing access to all sources of information individuals need so they can relate desirable health practices to their personal goals, aspirations, and values.

Health educators thus serve as psychological stage setters, stimulating people in the community to recognize health problems of which they may be unaware and to work for their solutions. Such problems might be pollution of the environment, chronic disease, overpopulation, drug abuse, or any of hundreds of ills that plague today's society. Health educators know that constructive group action can often accomplish wonders. Even more important, when people work together to solve a problem of common concern, they are more likely to arrive at the solution that will work.

Working with a community interest group when it is ready to act, the health educator helps its members set up effective participating relationships with other interested groups in the community—schools, churches, health agencies, welfare organizations, and labor unions. Perhaps the health educator will assist them in organizing a conference, planning a neighborhood cleanup campaign, or developing a television series dramatizing poor health conditions in farm labor camps. Whatever their duties may be in any particular case, educators' aim is always to encourage more effective individual and group action designed to maintain and improve the health of people throughout the community.

Health educators are prepared to use whatever method of communication is required by a given situation. They are expert in a variety of individual, group, and community educational approaches and know how those strategies can be used most effectively. Educators experiment with such educational techniques as closed-circuit television and teaching machines to find how they can be utilized optimally in the health field. Sometimes they help a group create its own educational materials—an experience that often leads to greater learning than could result from exposure to the most polished professional teaching aids.

Sometimes the problems in taking health action lie not with the community, however, but with the people providing health services. Clinic hours may be arranged more for the convenience of the professionals than of the public. Clinic workers may be curt and impersonal in their treatment of the people they serve. Advice may be given in technical terms rather than in language that lay people can easily understand. In those cases the health educator

can play an important role by helping other health personnel plan and deliver health care in ways that the community can and will use. Community health educators often have the task of educating legislators and other policy makers to consider consumer interests in planning and funding health programs.

With major changes taking place in the delivery of health care at local, regional, and national levels, participation of health educators in planning groups is increasingly in demand. By seeking the involvement of all interested persons, health educators work toward the solution of a particular problem through a variety of possibilities. They help to define common goals and to stimulate and guide discussion to assist various groups in reaching their own decisions and determining how they will be carried out. Thus, whether helping a ghetto neighborhood plan its own health center or helping representatives from state agencies agree on needed regional medical facilities, the health educator helps people to help themselves by bringing needs and resources together to create new partnerships for health.

Frequently, improving health care involves training for health workers who need to keep abreast of new knowledge in their own professional disciplines through continuing education, for young people entering a new health career, for neighborhood health aides who will help to improve health communications among the poor, and for special ethnic groups and citizen volunteers who are ready to assume new community leadership. Here again, the health educator can contribute to better health by helping to develop training programs, by suggesting creative methods, and even by training the trainers themselves to be better teachers.

Community health educators constantly seek new insights into human behavior, new ways to apply this knowledge in health education, and fresh approaches to building stronger and healthier communities.

Community health educators are employed in local, state, and federal agencies; voluntary health agencies; international health programs; community and regional planning councils' poverty projects; the Peace Corps; hospitals and clinics; industry; agricultural extension services; colleges and universities; and professional societies. The hours and working conditions vary according to location and type of establishment.

Educational and Legal Requirements

The minimum educational requirement for community health educators is a bachelor's degree in a program of community health education. These programs (with instruction in the biological and social sciences and basic health education skills) prepare students for many community jobs as well as for graduate study if desired. A bachelor's degree with courses in physiology, bacteriology, chemistry, biology, educational and social psychology, sociology, and cultural anthropology also provides the necessary foundation for admittance to master's degree programs.

A master's degree in public health or community health education is a requirement for professional or leadership positions in this field. The graduate programs include training in fundamental public health areas, such as disease control, epidemiology, statistics, and environmental health, as well as in-depth preparations in educational program planning and theory and methods analysis of health education problems. Doctoral degrees are also offered in public health education. Many persons with doctoral degrees in this specialty will continue to be needed to meet the growing demand for research and evaluation skills in health education and for teaching in institutions of higher learning.

Like workers in many other health occupations, community health educators should enjoy people and work well with them. They must be able to play a variety of roles successfully according to the demands of different situations. At times these educators work behind the scenes to help others start and carry out projects in the public interest. Sometimes they need to help people caught in conflict understand one another's point of view, while they maintain the trust and goodwill of all parties concerned. At other times educators must be people's advocates until the people come forward to speak for themselves.

Employment Opportunities

The need for qualified community health educators is expected to increase during the next decade. This outlook is based on the trend throughout the country of expanding preventive health programs in schools and communities. Qualified health educators can

advance to supervisory and managerial positions concerned with developing, managing, and evaluating health education programs.

Educational Therapists

Work Description

Educational therapy is part of a prescribed medical treatment program for patients who are physically disabled, emotionally disturbed, senile, or acutely and/or chronically ill. It is used mainly with patients who because of their disability are withdrawn, depressed, or agitated, or who feel detached from normal life and reality. As the name implies, educational therapy is a form of teaching. But the purpose is not so much to give knowledge as it is to stimulate interest, confidence, and self-esteem; to overcome abnormal moods and emotions; and to restore a sense of connection with the world and other people. Educational therapy is designed to meet the needs of the individual patient through instruction in prescribed subjects, and it provides treatment and rehabilitation measures to assist in restoring patients to their fullest mental and physical capacities.

As a member of the rehabilitation team, the *educational therapist* evaluates the learning ability, retention of previous learning experiences, interests, needs, and goals of the patient. Using this information, the therapist devises a treatment plan that is fitted into the patient's total rehabilitation program. The therapist then starts group or individual training in elementary, secondary, commercial, or vocational subjects to meet the needs and goals of the patient. Subject areas include English, chemistry, biology, mathematics, typing, shorthand, painting, bookkeeping, driver education, basic living skills, and preparation for obtaining a high school equivalency diploma. The educational therapist adapts course content and teaching methods to the patient's particular handicap and to the particular purpose for which they are intended.

Educational therapists may administer tests and send results to school authorities or state departments of education for grading and certification of the patient's education level. They also prepare reports on patients' emotional reactions to and progress in individual and group situations to provide data for use by the rehabili-

tation team. Educational therapists also refer patients to community education services such as colleges, universities, and credit-by-exam programs.

Work Environment

Many educational therapists work in Veterans Administration (VA) facilities such as hospitals, centers, domiciliaries, and regional offices. They are also employed in private and state schools, federal prisons, the Job Corps, and adult learning centers. Therapists work under doctors' directions in VA facilities, but usually without them in other types of facilities, and they usually work from 8:00 A.M. to 4:30 P.M., five days a week. Their work setting is often unstructured, and therapists are often allowed to organize and conduct patient therapy independently, under the direction of the chief therapist. Clinics are often small, with a staff of three to five therapists who work closely with patients on a one-to-one basis. There are no unusual physical demands in this work, and therapists who are blind, are partly or almost completely paralyzed, or use prosthetic devices can be successful if they have adapted to their disabilities.

Educational and Legal Requirements

Certain personal qualities are essential for success in educational therapy. Among these are sensitivity to underlying moods and emotions, strong motivation to help the disabled overcome their difficulties, and the ability to "reach" troubled people and to communicate with them. Before deciding on this field, a student should gain some volunteer experience in a community or institutional health care setting, with exposure to health and other rehabilitation problems. After completing high school, a student interested in a career in educational therapy must enroll in a four-year bachelor of arts or sciences degree program. The degree must be in an area such as education or physical education and include at least 12 credits in education. Typical coursework includes subjects such as psychology, work with the emotionally disturbed and physically handicapped, and psychology of disability. In addition to a college degree, two to seven months of clinical training are

required, either as in-service training or at a training center affiliated with a professional school. While in clinical training, the student observes patient treatments, attends patient conferences, and receives training in all areas of educational therapy. The student works with patients under the guidance of therapists in various areas of work and is evaluated for job performance, completion of clinical projects, and successful completion of a final examination. Several training institutions also offer postgraduate programs for qualified educational therapists.

Currently, there are no licensing or certification requirements for educational therapists. However, the American Association for Rehabilitation Therapy (AART) grants registration to educational therapists with experience in clinical therapy settings and/or postgraduate work. Registration is optional but desirable for employment purposes. Also, by joining an organization such as AART, therapists can enrich their job knowledge through nationwide contact and communication with other workers in their field.

Employment Opportunities

Employment prospects for educational therapists are expected to continue to be favorable. This expectation is based on the current nationwide expansion of rehabilitation facilities and the growing recognition of the importance of educational therapy. In addition, as life expectancy increases, there should be a greater need for therapists in programs for the aging. Disabilities developed as a result of military service or caused by daily stress and poor living conditions should also create a number of jobs for educational therapists. Qualified therapists can advance to supervisory positions; promotions are generally based on work experience and completion of advanced education courses.

Orientation and Mobility Instructors for the Blind

Work Description

Orientation and mobility instructors are specialists who teach visually impaired persons to move about effectively, efficiently, and safely in familiar and unfamiliar environments. They work with

blind people of differing ages and abilities, from young children to newly blind adults and persons with multiple handicaps. Their objective is to help these individuals achieve personal adjustment and maximum independence through specialized training. Orientation and mobility instructors evaluate the visual impairments of individuals to determine their level of adjustment, degree of motivation, and the extent and safety of their indoor and outdoor mobility. Based on this information, they plan and provide individualized programs for instruction.

Most instructors work on a one-to-one basis and assist patients in making the maximum use of their remaining senses, primarily auditory (sound) and tactile (touch). They train patients to orient themselves to physical surroundings and use a variety of actual or simulated travel situations to develop the patients' ability to travel alone, with or without a cane.

Orientation and mobility instructors evaluate and prepare progress reports on each of their clients and work closely with other professionals such as physicians and social workers, as well as volunteers and families of clients. They work with others to develop community resources within their area of expertise and attend various professional seminars, workshops, and conferences to keep abreast of the latest methods, techniques, and travel aids.

Work Environment

Orientation and mobility instructors are employed in residential and public schools, rehabilitation centers, and public and private community-based agencies, hospitals, nursing homes, and homes of clients. Working conditions for instructors vary from facility to facility. However, instructors usually work a 40-hour week, with hours from 8:00 A.M. to 4:30 P.M., and occasionally are required to work at a specific location. They may on occasion accompany their clients to recreational activities and social gatherings.

Educational and Legal Requirements

Persons considering a career in this area must enjoy working with people and have the capacity to learn from as well as teach clients. This work requires instructors to work closely with other professionals as part of a rehabilitation team, as well as with families,

friends, and colleagues of visually handicapped patients. They should possess mature judgment, emotional and social maturity, adaptability, resourcefulness, and leadership potential.

The basic educational requirement for this work is a bachelor's degree, although a master's degree is preferable. If the bachelor's degree is not in the specific field and a higher degree is being sought, it is preferred that the bachelor's degree be in one of the behavioral sciences. Programs consist of combined academic and clinical training; upon completion of the training, graduates are required to serve an internship. In addition, students entering this field must have no less than 20/40 visual acuity in the better eye with best possible correction and minimum of 140-degree continuous field measured together.

The American Association of Workers for the Blind provides certification for orientation and mobility instructors who meet specified education and experience standards. However, there are no nationwide uniform legal requirements for licensing, certification, or registration that serve as standards for employment. State or local licensing agencies should be contacted to determine their current standards.

Employment Opportunities

Employment prospects for qualified orientation and mobility instructors are quite favorable, and available openings far exceed the number of graduates entering the labor market each year.

Orientation and mobility instructors can advance to supervisory, managerial, and administrative positions in this field. Generally, advancement is based on work experience and expertise and the completion of advanced education courses.

Rehabilitation Teachers

Work Description

Rehabilitation teachers are specialists who provide instruction and guidance to visually impaired individuals. They develop plans of instruction that enable their clients to carry out daily activities,

develop independence, and achieve satisfactory ways of living. Rehabilitation teachers work with individuals or small groups in the home setting as well as in health care facilities, such as rehabilitation centers, hospitals, nursing homes, retirement homes, or community centers. They must have a broad knowledge of many subjects, and some teachers may specialize in a particular skill. For example, they help newly blind or congenitally blind persons develop communications skills by providing instruction in the use of Braille, large print, recorded materials, low-vision aids, and telephones. In addition, they teach nonverbal communication skills, such as facial expressions, hand movements, and head nods for use in communication with sighted persons.

Rehabilitation teachers provide instruction in personal and home management skills for normal living. These skills include personal hygiene and grooming, table etiquette, cooking, budget preparation, child care, and minor home repairs. These teachers also help clients obtain equipment designed for visually handicapped persons, such as Braille clocks and watches, sewing aids, and various types of appliances.

All clients with whom the rehabilitation teacher works are unique. Beyond the obvious fact that they are adults with visual impairment, the most common attribute of clients is that they are individuals with their own needs and desires, levels of functioning, and goals. These differences must be noted and respected by the rehabilitation teacher, whose job it is to help the client reach the level of functioning the client wishes, not to make the client fit a preconceived image.

Educational and Legal Requirements

Students considering this career area can expect to spend four to six years in preparation after completing high school. The minimum educational standard for entry into this field is a bachelor's degree from an accredited college; however, a master's degree in this specialization is preferable in most cases.

The American Association of Workers for the Blind certifies rehabilitation teachers who meet specified education and experience requirements. However, there are no national standard legal requirements concerning licensure, registration, certification, or

continuing education. State or local licensing agencies should be contacted to gather information regarding this matter.

Employment Opportunities

The need for qualified rehabilitation teachers is growing due to increases throughout the country in the number of visually handicapped persons, particularly among senior citizens. Each of these individuals will need the professional, specialized services that only a rehabilitation teacher can provide.

Qualified rehabilitation teachers can advance to supervisory or administrative positions in health agencies, or to teaching positions in colleges or universities. Generally, advancement in this field is governed by experience, skill level, and the completion of advanced education programs.

School Health Educators

Work Description

School health educators help children and young people develop the knowledge, attitudes, and skills they need to live healthfully and safely. They cooperate closely in this task with the school's physician and nurse, as well as with the school's other teachers and service personnel. Usually, they also participate in community health activities as representatives of the school health education program.

Health education has a place all the way from nursery school and kindergarten through high school and on into college, because it deals with day-to-day living. It is health education when five-year-olds learn to eat new foods, and also when high school seniors make a field survey of the health services available in their community.

Depending on the school system and on the school grades covered, health courses may include such subject matter as family life education, first aid, safety education, choice and use of health services and products, nutrition, personal hygiene, air and water pollution, alcohol and drug abuse, and community health. Health courses include the principles of mental health and good human

relations, as well as marriage and family life. Comprehensive health education curricula include sex education where allowed; in some states, it is required.

School health educators may have even broader responsibilities as health coordinators. School health coordinators may work in a single school or in an entire school system; they furnish leadership in developing and maintaining an adequate, well-balanced health program and helping all groups interested in the health of school children work together effectively.

Educational and Legal Requirements

The school health educator needs four years of college education leading to a bachelor's degree, with a background in the biological, behavioral, and social sciences and health education. Increasingly, a master's degree is required.

The school health educator must meet the regular certification standards for teachers in the state. Generally, these call for 15 to 20 credits in professional courses in a school of education. These courses usually include educational philosophy, the techniques of teaching, child growth and development, and educational psychology. A period of internship may also be required. These standards vary from state to state, and the student is advised to check desired locations for requirements.

For the school health educator, the advanced degree is usually in the field of health education. A doctoral degree is often required for college teaching jobs.

The school health educator should have an aptitude for scientific and social studies. In general, personal qualifications for this educational specialist are similar to those for the successful teacher in any field. It is important to like working with children and young people and to have patience, a sense of humor, good judgment, and emotional stability.

Employment Opportunities

According to the American School Health Association, moderate increases are expected in the demand for school health educators. This expectation is based primarily on greater public interest in

health programs as well as on increases in federal funds available for health education programs.

Health educators can advance to positions as school health coordinators and assume responsibility for health education in an entire school district. Some may move into administrative or personnel service positions within the district's classification system. Promotions to higher levels depend on specific requirements of the particular school districts.

Teachers of the Visually Handicapped

Work Description

Teachers of the visually handicapped provide specialized educational services to children in residential, public, or private schools. Residential schools are those in which blind children live and attend regular classes with other blind children. Teachers in these schools usually concentrate their efforts on teaching a single subject, such as history or mathematics, but they may also be called on to give special education courses.

Resource programs differ from residential schools by allowing students to attend regular public school classes. In these programs, a central location is provided for use by visually handicapped students from several school districts. Here resource teachers provide instruction in special skills, such as Braille or the use of recording devices. In addition, the teachers make certain that the students' assignments are up-to-date and that each student has complete lessons in Braille, large type, or recorded form. Besides working directly with visually handicapped children, resource teachers coordinate their efforts with classroom teachers, school psychologists, and parents to ensure that educational objectives are being met.

A third type of program in which teachers of the visually handicapped work is called an *itinerant program*. In such a program the teachers travel from school to school and meet with visually handicapped students on a regularly scheduled basis. In this way, students are able to attend their regular neighborhood school classes and receive special instruction, without needing to travel to a central school district location. Teachers in itinerant programs also act as consultants on special education to classroom teachers,

parents, and school officials. It is important to note that teachers of the visually handicapped, regardless of the type of program in which they work, may be called on to teach a wide range of regular school subjects plus special education courses.

Educational and Legal Requirements

Students considering this career area can expect to spend from four to six years in preparation after completing high school. The educational minimum for entry into this work is a bachelor's degree from an accredited college; however, a master's degree is preferred in most cases.

The American Association of Workers for the Blind certifies teachers of the visually handicapped who meet specified education and experience requirements. In addition, these teachers must be certified or licensed by the department of education in the state in which they work. Because these requirements vary throughout the country, students should contact the local superintendent of schools or the state department of education to obtain specific information.

Employment Opportunities

Employment prospects in this career area are favorable. As greater numbers of visually handicapped children require specialized education services, the demand for qualified teachers is expected to grow. Qualified teachers of the visually handicapped can advance to supervisory and administrative positions or teaching positions at the college level. Advancement is usually based on experience, skill level, and the completion of advanced education courses.

Employment Trends in Health Education

There is a tremendous variety of employment possibilities available in health education, and this range is expected to grow in the twenty-first century. Major changes in the delivery of health care,

the aging of the population, and changes in laws covering the schooling and rehabilitation of handicapped children and adults will account for the opening up of many different careers in health education.

Health educators are sought by official and volunteer agencies, health planning programs, HMOs, neighborhood health centers, mental health centers, hospitals, clinics, and other community, state, and federal agencies. As the need for these professions increases, workers with advanced degrees will move into both collegiate appointments and consultant roles.

Earnings

Because health educators are not licensed, there is no standard earning scale for them. Those in school-affiliated roles receive salaries and benefits on the same scale as other teachers in their school system. Those working in industry and government usually receive higher salaries, commensurate with their education and experience. Those in college teaching receive the same range of pay as other teachers. Those in consultant roles usually set their own fees, based on their location and other factors.

Related Occupations

Health education is a profession that bridges the gap between health information and health practices. It also seeks to encourage the responsibility of individuals for their own health and to work toward the national goal of optimal health for all. Other members of the team who engage in similar work include dietitians, nurses, physicians, physical therapists, occupational therapists, and other related health professions.

Additional Information

For further information, contact:

- Association of Schools of Public Health, 1015 15th St. N.W., Suite 404, Washington, DC 20005.

- American School Health Association, 7263 State Route 43, P.O. Box 708, Kent, OH 44240.
- U.S. Department of Health and Human Services, HRSA, Bureau of Health Professions, 5600 Fishers Ln., Room 805, Rockville, MD 20857.
- American Association for Rehabilitation Therapy, P.O. Box 93, North Little Rock, AR 72116.

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Chapter 29



Veterinary Medicine

Key Terms

Animal and human health	Food safety inspections
Standards for pure food from animal sources	Physician/veterinarian teams
Livestock health	Regulatory medicine
Veterinarian	Public health
Transmissible diseases	Toxicology
Space research	Animal technician
Marine research	Groomer
Companion animal medicine	Groom
Food animal veterinarian	Veterinary assistant
Research	Keeper

Veterinary medicine is one of the oldest healing arts. It is involved in both *animal and human health*. A main function is the control of diseases transmissible from animals to humans, and the discovery of new knowledge in comparative medicine.

Veterinary medicine has come to the rescue of a disappearing food supply. Doctors of veterinary medicine (D.V.M.'s) monitor the food supply. They guard the health of all domestic protein-producing animals and set and enforce *standards for pure food from animal sources*. Safeguard of our food supply by ensuring *livestock health* and wholesomeness is one of their most important functions. Through this work the whole population is served directly.

Veterinarians

Work Description

Veterinarians are responsible for many other safeguards to both humans and animals. Their special knowledge of diseases that affect both is essential to the control of *diseases transmissible* from animals to humans. Rabies is an example of one of those diseases that no longer affects human health, because veterinarians have brought it under control in domesticated animals.

The veterinary profession of today is in the forefront of *space* and *marine research*, as well as efforts to discover new and safe treatments for human and animal diseases.

Many enter the field because they like working with animals. Typically, veterinarians diagnose medical problems in their animal patients, perform surgery, and prescribe and administer medicine and drugs.

Veterinarians who treat animals use medical equipment, such as stethoscopes; surgical instruments; and diagnostic equipment, such as radiographic and ultrasound equipment. Veterinarians working in research use a full range of sophisticated laboratory equipment.

Approximately three-quarters of the veterinarians in the United States are in private practice. About 35 percent of veterinarians provide care for small animals, and approximately 7 percent care for large animals (farm animals and horses). Some veterinarians are involved in a mixed practice in which they care for both large and small animals.

Companion animal medicine encompasses the prevention, diagnosis, and treatment of pet diseases—typically found in dogs and cats. Veterinarians in this field provide these services in animal hospitals or clinics.

Food animal veterinarians specialize in the health care of cattle, poultry, swine, fish, and sheep. They provide preventive care by advising ranchers and farmers on the proper care and management of livestock.

The type of practice varies by geographic region. Veterinarians in rural areas are more likely to work with livestock and horses than those in metropolitan centers. Because pets are found everywhere, however, very few veterinarians work exclusively with large animals.

A number of veterinarians engage in *research*, *food safety inspections*, or education. It is not generally understood that veterinarians contribute to human as well as animal health care. Veterinarians may join physicians and scientists in carrying out research at an academic medical center, for example, and explore such topics as techniques of organ transplantation or the efficacy of a new drug.

A number of veterinarians work with physicians and scientists as they research ways to prevent and treat human health problems, such as cancer, AIDS, and alcohol or drug abuse. Some determine the effects of drug therapies, antibiotics, or new surgical techniques by testing them on animals.

Some veterinarians are in *regulatory medicine* or *public health*. They inspect food, investigate outbreaks of disease, and work in scientific laboratories. Veterinarians help prevent the outbreak and spread of animal diseases, some of which—like rabies—can be transmitted to humans.

Protection of the population from environmental hazards is a major concern of the small but significant number of veterinarians who specialize in *toxicology* or animal pathology. Although there have been impressive successes in controlling diseases transmitted through food animals, changing technology and more complex methods of food production present new threats to food safety. Residues from herbicides, pesticides, and antibiotics used in food production pose a particular problem. Scientific advances in livestock production have, paradoxically, created a need for veterinarians capable of dealing with contamination of the food chain by toxic chemicals.

Some veterinarians teach in veterinary colleges, work in zoos or animal laboratories, or engage in a combination of clinical and research activities.

Work Environment

Veterinarians usually treat pet animals in hospitals and clinics. Those in large animal practice usually work out of well-equipped mobile clinics and drive considerable distances between farms and ranches to care for their animal patients. Through their interaction with diseased animals, veterinarians can be exposed to injury, disease, and infection; precautions and protection are necessary.

Veterinarians often work long hours, with one-third of full-time workers spending 50 or more hours on the job. Those in group practices may take turns being on call for evening, night, or weekend work. Solo practitioners can work extended and weekend hours, responding to emergencies or squeezing in unexpected appointments.

Veterinarians work outdoors in all kinds of weather, and they have to treat animals or perform surgery under less-than-sanitary conditions. When working with animals that are frightened or in pain, veterinarians risk being bitten, kicked, or scratched.

Practitioners working in nonclinical areas, such as public health and research, have working conditions similar to those of

other professionals in those lines of work. In these cases, veterinarians enjoy clean, well-lighted offices or laboratories and spend much of their time dealing with people rather than animals.

Employment Trends

Most recently, veterinarians held about 59,000 jobs. About 28 percent were self-employed in solo or group practices. Most others were employees of another veterinary practice. The federal government employed about 800 civilian veterinarians, chiefly in the U.S. Department of Agriculture, and about 400 military veterinarians in the U.S. Army and U.S. Air Force. Other employers of veterinarians include state and local governments, colleges of veterinary medicine, medical schools, research laboratories, animal food companies, and pharmaceutical companies. A few veterinarians work for zoos. Most veterinarians caring for zoo animals, however, are private practitioners who contract with zoos to provide services, usually on a part-time basis.

Educational and Legal Requirements

Prospective veterinarians must graduate from a four-year program at an accredited college of veterinary medicine with a Doctor of Veterinary Medicine (D.V.M. or V.M.D.) degree and obtain a license to practice. Twenty-seven colleges in 26 states meet accreditation standards set by the Council on Education of the American Veterinary Medical Association. The prerequisites for admission vary by veterinary medical college. Many of these colleges do not require a bachelor's degree for entrance; all, however, require a significant number of credit hours—ranging from 45 to 90 semester hours—at the undergraduate level. Most of the students admitted will have completed an undergraduate program.

Preveterinary courses emphasize the sciences, and veterinary medical colleges typically require classes in organic and inorganic chemistry, physics, biochemistry, general biology, animal biology, animal nutrition, genetics, vertebrate embryology, cellular biology, microbiology, zoology, and systemic physiology. Some programs require calculus; some require only statistics, college algebra and trigonometry, or precalculus; others require no math at all. Most

veterinary medical colleges also require core courses, including some in English or literature, the social sciences, and the humanities.

Most veterinary medical colleges will consider only applicants who have a minimum grade-point average (GPA). The required GPA varies by school, from a low of 2.5 to a high of 3.2, based on a maximum GPA of 4.0. Nevertheless, the average GPA of candidates at most schools is higher than these minimums. Those who receive offers of admission usually have a GPA of 3.0 or better.

In addition to satisfying preveterinary course requirements, applicants must submit test scores from the Graduate Record Examination (GRE), the Veterinary College Admission Test (VCAT), or the Medical College Admission Test (MCAT), depending on the preference of each college.

Additionally, in the admissions process, veterinary medical colleges weigh heavily a candidate's veterinary and animal experience. Formal experience, such as work with veterinarians or scientists in clinics, agribusiness, research, or in some area of health science, is particularly advantageous. Less formal experience, such as working with animals on a farm or ranch or at a stable or animal shelter, is also helpful. Students must demonstrate ambition and an eagerness to work with animals.

Competition for admission to veterinary school is keen. The number of accredited veterinary colleges has remained at 27 since 1983, whereas the number of applicants has increased. About one in three applicants was accepted in 1998. Most veterinary medical colleges are public, state-supported institutions and reserve the majority of their openings for in-state residents. Twenty-one states that do not have a veterinary medical college have agreed to pay a fee or subsidy to help cover the cost of veterinary education for a limited number of their residents at one or more out-of-state colleges. Nonresident students who are admitted under such a plan may have to pay out-of-state tuition, or they may have to repay their state of residency all, or part, of the subsidy provided to the contracting college. Residents of the remaining three states (Connecticut, Maine, and Vermont) and the District of Columbia may apply to any of the 27 veterinary medical colleges as an at-large applicant. The number of positions available to at-large applicants is very limited at most schools, making winning admission difficult for such individuals.

While in veterinary medical college, students receive additional academic instruction in the basic sciences for their first two years.

Later in the program, students are exposed to clinical procedures, such as diagnosing and treating animal diseases and performing surgery. They also do laboratory work in anatomy, biochemistry, medicine, and other scientific subjects. At most veterinary medical colleges, students who plan a career in research can earn both a D.V.M. degree and a Doctor of Philosophy (Ph.D.) degree at the same time.

Veterinary graduates who plan to work with specific types of animals or who want to specialize in a clinical area, such as pathology, surgery, radiology, or laboratory animal medicine, usually complete a one-year internship. Interns receive a small salary but typically find that their internship experience leads to a higher beginning salary, relative to other starting veterinarians. Veterinarians who seek board certification in a specialty must also complete a two- to three-year residency program that provides intensive training in specialties, such as internal medicine, oncology, radiology, surgery, dermatology, anesthesiology, neurology, cardiology, ophthalmology, and exotic small animal medicine.

All states and the District of Columbia require that veterinarians be licensed before they can practice. The only exemptions are for veterinarians working for some federal agencies and some state governments. Licensing is controlled by the states and is not strictly uniform, although all states require successful completion of the D.V.M. degree—or equivalent education—and passing a national board examination. The Educational Commission for Foreign Veterinary Graduates (ECFVG) grants certification to individuals trained outside the United States who demonstrate that they meet specified requirements for the English language and clinical proficiency. ECFVG certification fulfills the educational requirement for licensure in all states except Nebraska. Applicants for licensure can satisfy the examination requirement by passing the North American Veterinary Licensing Exam (NAVLE), which replaced the National Board Examination (NBE) and the Clinical Competency Test (CCT) as of April 2000. The new NAVLE, which is administered on a computer, takes one day to complete and consists of 360 multiple-choice questions, covering all aspects of veterinary medicine. The NAVLE also includes visual materials designed to test diagnostic skills.

The majority of states also require veterinary candidates to pass a state jurisprudence examination covering state laws and regulations. Some states do additional testing on clinical competency.

There are few reciprocal agreements between states, making it difficult for a veterinarian to practice in a different state without first taking another state examination.

Thirty-nine states have continuing education requirements for licensed veterinarians. Requirements differ by state and may involve attending a class or otherwise demonstrating knowledge of recent medical and veterinary advances.

Most veterinarians begin as employees or partners in established practices. Despite the substantial financial investment in equipment, office space, and staff required, many veterinarians with experience will eventually set up their own practice or purchase an established one.

Newly trained veterinarians can become U.S. government meat and poultry inspectors, disease-control workers, epidemiologists, research assistants, or commissioned officers in the U.S. Public Health Service, U.S. Army, or U.S. Air Force. A state license may be required in such cases.

Prospective veterinarians must have good manual dexterity. They should have an affinity for animals and the ability to get along with animal owners. Additionally, they should be able to make decisions quickly in emergencies.

Employment Opportunities

Employment of veterinarians is expected to grow faster than the average for all occupations through 2008. Job openings stemming from the need to replace veterinarians who retire or otherwise leave the labor force will be almost as numerous as new jobs resulting from employment growth over the 1998–2008 period.

The number of jobs for large animal veterinarians is expected to grow slowly, because productivity gains in the agricultural production industry mean less demand for veterinarians to treat food animals. Nevertheless, job prospects may be better for veterinarians who specialize in farm animals than for small animal practitioners, because most veterinary medical college graduates do not have the desire to work in rural or isolated areas.

Continued support for public health and food safety, disease-control programs, and biomedical research on human health problems will contribute to the demand for veterinarians, although such positions are few in number. Also, anticipated budget tight-

ening in the federal government may constrain funding for some programs, limiting job growth. Veterinarians with training in public health and epidemiology should have the best opportunities for a career in the federal government.

Earnings

Median annual earnings of veterinarians were \$60,910, according to the latest statistics. The middle 50 percent earned between \$47,020 and \$84,220. The lowest 10 percent earned less than \$36,670, and the highest 10 percent earned more than \$128,720.

According to a survey by the American Veterinary Medical Association, average starting salaries of 2000 veterinary medical college graduates varied by type of practice as follows:

Small animal, predominant	\$42,918
Small animal, exclusive	42,640
Large animal, exclusive	41,629
Large animal, predominant	41,439
Mixed animal	40,358
Equine	28,526

New veterinary medical college graduates who take positions with the federal government usually start at \$35,808. Beginning salaries were slightly higher in selected areas where the prevailing local pay level was higher. The average annual salary for veterinarians in the federal government in nonsupervisory, supervisory, and managerial positions was \$67,482 in 2001.

Related Occupations

Veterinarians prevent, diagnose, and treat diseases, disorders, and injuries in animals. Those who do similar work for humans include chiropractors, dentists, optometrists, physicians, and podiatrists. Veterinarians have extensive training in physical and life sciences,

and some do scientific and medical research, closely paralleling occupations such as biological, medical, and animal scientists.

Animal trainers, animal breeders, and veterinary technicians work extensively with animals. Like veterinarians, they must have patience and feel comfortable with animals. However, the level of training required for these occupations is substantially less than that needed by veterinarians.

Additional Information

For more information on careers in veterinary medicine and a list of U.S. schools and colleges of veterinary medicine, send a letter-size, self-addressed, stamped envelope to:

- American Veterinary Medical Association, 1931 N. Meacham Rd., Suite 100, Schaumburg, IL 60173-4360.

For information on scholarships, grants, and loans, contact the financial aid officer at the veterinary schools to which you wish to apply.

For information on veterinary education, write to:

- Association of American Veterinary Medical Colleges, 1101 Vermont Ave. NW, Suite 710, Washington, DC 20005.

For information on the federal agencies that employ veterinarians and a list of addresses for these agencies, write to:

- National Association of Federal Veterinarians, 1101 Vermont Ave. NW, Suite 710, Washington, DC 20005.

Animal Technicians

Work Description

Animal technicians play an important part in human and animal health. Animal technicians who work in veterinary clinics are often called veterinary technicians and provide assistance to the veterinarian in daily work activities. Animal technicians who work in research animal facilities are often called laboratory animal technicians and provide assistance to clinical veterinarians and research

scientists who are seeking both causes and treatments of human and animal diseases.

Working under appropriate supervision, animal technicians gather and record information regarding cases, prepare animal patients for examination, and ready instruments and equipment for use. In addition, technicians collect various specimens, perform standardized laboratory tests, and assist veterinarians in diagnostic, medical, and surgical procedures by preparing medications and applying dressings.

Work Environment

Many animal technicians are employed in veterinary clinics that are operated by one or more veterinarians who employ several veterinary technicians and assistants. Animal technicians working in veterinary clinics work primarily with companion animals, such as dogs and cats.

Laboratory animal technicians are employed by pharmaceutical companies, feed manufacturers, animal breeders, colleges and universities, hospitals, the military, and health agencies in city, state, and federal governments. Laboratory animal technicians work primarily with rodents and rabbits, but may also work with dogs, cats, large animals, and primates. Most laboratory animal technicians are employed by large companies.

For the most part, animal technicians work regular hours, although shift work and weekend duty may be required in some instances. It is important to note that animal technicians risk being physically injured by certain animals and are exposed to animal diseases that may be transmissible to humans.

Educational and Legal Requirements

Most animal technicians complete a two-year program leading to an associate's degree from a community college that offers a training program accredited by the American Veterinary Medical Association. Typically, the training programs cover two academic years of college-level study and require completion of general courses in biology, chemistry, communications, mathematics, economics, and business management, as well as specific courses covering such subjects as physiology, nutrition, microbiology,

parasitology, animal care, laboratory procedures, clinical techniques, radiology, toxicology, ethics, and client relations. Practical experience with live animals and field experience under actual working conditions are important parts of most programs.

A high school diploma or equivalency certificate, evaluated on an individual basis, is required by most community colleges offering an associate degree in animal technology. Also considered in the selection of candidates are aptitudes, interests, and the ability to profit from the courses offered. Generally, a strong background in high school science courses, mathematics, and English is most useful to college candidates. In some cases, individuals without formal educational credentials enter this field through on-the-job training in the basic levels of animal care. However, they have considerably less opportunity to attain supervisory or advanced positions and are encouraged to engage in continuing education in this field.

The American Association for Laboratory Animal Science (AALAS) provides certification for three levels of laboratory animal technicians: Assistant Laboratory Animal Technician, Laboratory Animal Technician, and Laboratory Animal Technologist. A minimum of a high school diploma or GED is required at all levels of AALAS certification. Animal care experience in a laboratory animal facility is also required. For details of the AALAS certification program, including requirements and costs, write to the address found at the end of this section.

Individuals who have had one year of continuous full-time employment in laboratory animal technology that offers experience in animal care and have a high school diploma are eligible to take the Assistant Laboratory Animal Technician examination.

The Laboratory Animal Technician is a high school graduate who has completed three years of full-time employment as an animal technician in a laboratory animal facility that offers experience in animal care and use or has graduated from a college curriculum in laboratory animal technology (two academic years) and has completed one year of continuous full-time employment as an animal technician in a laboratory animal facility.

The Laboratory Animal Technologist is a high school graduate who has completed six years of full-time employment as an animal technician in a laboratory animal facility, or who has graduated from a college curriculum in laboratory animal science or technology of not less than four academic years, or who has earned a two-

year degree in laboratory animal technology and a bachelor's degree in animal science or a related technology.

Employment Trends

Employment opportunities for well-trained laboratory animal technicians appear to be excellent. Because most laboratory animal technicians work for large employers, they often enjoy better pay, benefits, and career advancement opportunities than other animal technicians do. Pharmaceutical and chemical companies, food production companies, and research laboratories are major sources of employment for laboratory animal technicians. In addition, there are teaching hospitals, medical schools and universities, and both civilian and military government jobs. Continued prosperity is expected to bring more pets into homes, while the need for protection may increase the number of watchdogs in homes and businesses. In rural areas, the need for animal technicians is expected to increase along with the population as more animals are bred for use as food. The increasing number of animals used for riding and racing also will require medical care and treatment. There are approximately 50,000 veterinarians in the United States actively engaged in some form of professional activity. The AVMA estimates that approximately one animal technician is needed for each veterinarian.

Experience and continuing education are necessary to advance in this field. For technicians or assistants who begin with on-the-job training, completing a formal degree program should enhance advancement. In some laboratories that employ a number of technicians, advancement to positions with considerable supervisory responsibility is possible for qualified individuals.

Additional Information

For further information, contact:

- American Association for Laboratory Animal Science, 9190 Crestwyn Hills Drive, Memphis, TN 38125.
- American Veterinary Medical Association, 930 N. Meacham Rd., Suite 100, Schaumburg, IL 60173-4360.

- U.S. Department of Agriculture, Animal and Plant Health, Federal Building, Butler Square West, 4th Floor, Hyattsville, MD 20782. Internet: <http://www.saludos.com/articles/vets.html#vets>.

Veterinary Assistants and Nonfarm Animal Caretakers

Work Description

Many people like animals. But, as pet owners can attest, taking care of them is hard work. Animal caretakers, sometimes called animal attendants or animal keepers, feed, water, groom, bathe, and exercise animals and clean, disinfect, and repair their cages. They also play with the animals, provide companionship, and observe behavioral changes that could indicate illness or injury.

Boarding kennels, animal shelters, veterinary hospitals and clinics, stables, laboratories, aquariums, and zoological parks all house animals and employ caretakers. Job titles and duties vary by employment setting.

Kennel staff typically care for small companion animals such as dogs and cats while their owners are working or traveling out of town. Beginning attendants perform basic tasks, such as cleaning cages and dog runs, filling food and water dishes, and exercising animals. Experienced attendants may provide basic animal health care, as well as bathe animals, trim nails, and attend to other grooming needs. Caretakers who work in kennels may also sell pet food and supplies, assist in obedience training, help with breeding, or prepare animals for shipping.

Animal caretakers who specialize in grooming, or maintaining a pet's—usually a dog's or cat's—appearance are called *groomers*. Some groomers work in kennels, veterinary clinics, animal shelters, or pet supply stores. Others operate their own grooming businesses. Groomers answer telephones, schedule appointments, discuss pets' grooming needs with their clients, and collect information on the pet's disposition and its veterinarian. Groomers are often the first to notice a medical problem, such as an ear or skin infection, that requires veterinary care.

Grooming the pet involves several steps. An initial brush-out is followed by a first clipping of hair or fur using electric clippers, combs, and grooming shears. The groomer then cuts the nails, cleans the ears, bathes, and blow-dries the animal. The procedure ends with a final clipping and styling.

Animal caretakers in animal shelters perform a variety of duties and work with a wide range of animals. In addition to attending to the basic needs of the animals, caretakers must keep records of the animals received and discharged and any tests or treatments done. Some vaccinate newly admitted animals under the direction of a veterinarian or veterinary technician, and they may euthanize (painlessly put to death) seriously ill, severely injured, or unwanted animals. Caretakers in animal shelters also interact with the public by answering telephone inquiries, screening applicants for animal adoption, or educating visitors on neutering and other animal health issues.

Animal caretakers in stables are called *grooms*. These workers saddle and unsaddle horses, give them rubdowns, and walk them through a cool-off after a ride. They also feed, groom, and exercise the horses, clean out stalls and replenish bedding, polish saddles, clean and organize the tack (harness, saddle, and bridle) room, and store supplies and feed. Experienced grooms may help train horses.

Animal caretakers in animal hospitals or clinics are called *veterinary assistants*. Veterinarians rely on caretakers to keep a constant eye on the condition of animals under their charge. Caretakers watch as animals recover from surgery, check whether dressings are still placed correctly, observe the animals' overall attitude, and notify a doctor if anything seems out of the ordinary. Caretakers clean the facilities constantly to maintain sanitary conditions in the hospital.

Laboratory animal caretakers work in research facilities and assist with the care of a wide range of animals, including mice, rats, sheep, pigs, cattle, dogs, cats, monkeys, birds, fish, and frogs. They feed and water the animals, clean cages and change bedding, and observe the animals for signs of illness, disease, or injury. They may administer medications orally or topically according to instructions, prepare samples for laboratory examination, sterilize laboratory equipment, and record information regarding genealogy, diet, weight, medications, food intake, and clinical signs of pain and distress. Along the way, they work with scientists, physicians, veterinary technicians, veterinarians, and laboratory technicians.

In zoos, caretakers called *keepers* prepare the diets and clean the enclosures of animals, and sometimes assist in raising them when they are very young. They watch for any signs of illness or injury, monitor eating patterns and watch for any changes in behavior, and record their observations. Keepers may also answer questions and ensure that the visiting public behaves responsibly toward the exhibited animals. Depending on the zoo, keepers may be assigned to work with a broad range of animals such as mammals, birds, or reptiles, or they may work with a limited collection of animals such as primates, large cats, or small mammals.

Work Environment

People who love animals get satisfaction from working with and helping them. Unfortunately, some of the work may be unpleasant, as well as physically and emotionally demanding, and sometimes dangerous. Caretakers have to clean animal cages and lift, hold, or restrain animals, risking exposure to bites or scratches. Their work often involves kneeling, crawling, repeated bending, and lifting heavy supplies such as bales of hay or bags of feed. Animal caretakers must take precautions when treating animals with germicides or insecticides. In addition, the work setting can be noisy.

Animal caretakers who witness abused animals or who assist in the euthanizing of unwanted, aged, or hopelessly injured animals may experience emotional stress. Those working for private humane societies and municipal animal shelters often deal with the public, some of whom might react with hostility to any implication that the owners are neglecting or abusing their pets. Such workers must maintain a calm and professional demeanor while they enforce the laws regarding animal care.

Some caretakers may work outdoors in all kinds of weather. Hours are irregular: Animals have to be fed every day, so caretakers often work weekend and holiday shifts. In some animal hospitals, research facilities, and animal shelters, an attendant is on duty 24 hours a day, which means night shifts. Most full-time caretakers work about 40 hours per week; some work 50 hours per week or more. Caretakers of show and sports animals also must travel to competitions.

Employment Opportunities

Animal caretakers and veterinary assistants held about 181,000 jobs in 1998. About 45,000 of them worked as veterinary assistants in veterinary services. The remainder worked primarily in boarding kennels, but some also worked in animal shelters, stables, grooming shops, zoos, and local, state, and federal agencies. In 1998, more than one out of every four animal caretakers was self-employed, and more than one in three worked part-time.

Educational and Legal Requirements

Most animal caretakers are trained on the job. Employers generally prefer to hire people with some experience with animals. Some training programs are available for specific types of animal caretakers, but formal training is rarely necessary for entry-level positions.

Most pet groomers learn their trade by completing an informal apprenticeship, usually lasting 6 to 10 weeks, under the guidance of an experienced groomer. Prospective groomers may also attend one of the 50 state-licensed grooming schools located throughout the country; these programs vary in length from 4 to 18 weeks. The National Dog Groomers Association of America certifies groomers who pass a written examination, with a separate part testing practical skills. Beginning groomers often start by taking on one duty, such as bathing and drying the pet. They eventually assume responsibility for the entire grooming process, from the initial brush-out to the final clipping. Groomers who work in large retail establishments or kennels may, with experience, move into supervisory or managerial positions. Experienced groomers often choose to open their own shops.

Beginning animal caretakers in kennels learn on the job. They usually start by cleaning cages and feeding and watering animals. Kennel caretakers may be promoted to kennel supervisor, assistant manager, and manager, and those with enough capital and experience may open their own kennels.

The American Boarding Kennels Association (ABKA) offers a three-stage, home-study program for individuals interested in pet care. The first two study programs address basic and advanced principles of animal care. The third program focuses on in-depth animal care and good business procedures. Those who complete

the third program and pass oral and written examinations administered by the ABKA become Certified Kennel Operators (CKO).

There are no formal educational requirements for animal caretakers in veterinary facilities. They are trained on the job, usually under the guidance of a veterinarian or veterinary technician. They start by performing tasks related to basic animal health care, such as keeping cages and examination areas sanitary. They also help veterinarians prepare for surgery, sterilize surgical equipment, observe recovering animals, and give medications and basic medical treatment under the directions of a veterinarian or veterinary technician. Highly motivated veterinary assistants may become veterinary technicians, after completing additional training from one of approximately 70 accredited veterinary technology programs.

Employers of entry-level laboratory animal caretakers generally require a high school diploma or a passing General Educational Development (GED) test score. A few colleges and vocational schools offer programs in laboratory animal science that provide training for technician positions, but such training is not strictly necessary. New animal caretakers working in laboratories begin by providing basic care to laboratory animals. With additional training, experience, and certification, they may advance to more technical positions in laboratory animal care, such as research assistant, mid-level technician, or senior-level technologist.

The American Association for Laboratory Animal Science (AALAS) offers certification for three levels of technicians. Those who wish to become certified as Assistant Laboratory Animal Technicians (ALAT) must satisfy education and experience requirements before taking an examination administered by AALAS. Laboratory Animal Technician and Laboratory Animal Technologist are the second and third levels of certification of the AALAS.

Some zoological parks may require their caretakers to have a bachelor's degree in biology, animal science, or a related field. Most require experience with animals, preferably as a volunteer or paid keeper in a zoo. Zoo keepers may advance to senior keeper, assistant head keeper, head keeper, and assistant curator. Note that few openings occur, especially for the higher-level positions.

Animal caretakers in animal shelters are not required to have any specialized training, but training programs and workshops are increasingly available through the Humane Society of the United States, the American Humane Association, and the National Animal Control Association. Workshop topics include cruelty

investigations, appropriate methods of euthanasia for shelter animals, and techniques for preventing problems with wildlife. With experience and additional training, caretakers in animal shelters may become adoption coordinators, animal control officers, emergency rescue drivers, assistant shelter managers, or shelter directors.

Employment Trends

Employment opportunities for animal caretakers and veterinary assistants generally are expected to be good. The outlook for caretakers in zoos, however, is not favorable; job seekers will face keen competition because of expected slow growth in zoo capacity, low turnover, and the fact that the occupation attracts many candidates.

Employment in this field is expected to grow faster than the average through 2008. The growth of the pet population, which drives employment of animal caretakers in kennels, grooming shops, animal shelters, and veterinary clinics and hospitals, is expected to slow. Nevertheless, pets remain popular and pet owners—including a large number of baby boomers whose disposable income is expected to increase as they age—may increasingly take advantage of grooming services, daily and overnight boarding services, and veterinary services, spurring employment growth for animal caretakers and veterinary assistants.

Demand for animal caretakers in animal shelters is expected to remain steady. Communities are increasingly recognizing the connection between animal abuse and abuse toward humans, and should continue to commit funds to animal shelters, many of which are working hand-in-hand with social service agencies and law enforcement teams.

Despite growth in demand for animal caretakers, the overwhelming majority of jobs will result from the need to replace workers leaving the field. Many animal caretaker jobs that require little or no training have work schedules that tend to be flexible; therefore, it is ideal for people seeking their first job and for students and others looking for temporary or part-time work. Because turnover is quite high, largely due to the arduous physical labor, the overall availability of jobs should be very good. Much of the work of animal caretakers is seasonal, particularly during vacation periods.

Earnings

Median hourly earnings of nonfarm animal caretakers were \$7.12 in 1998. The middle 50 percent earned between \$5.92 and \$8.82 per hour. The bottom 10 percent earned less than \$5.54 and the top 10 percent earned more than \$11.39 per hour. Median hourly earnings in the industries employing the largest numbers of non-farm animal caretakers in 1997 are shown below:

Local government, except education and hospitals	\$10.40
Commercial sports	7.60
Animal services, except veterinary	7.10
Membership organizations, not elsewhere classified	6.60
Veterinary services	6.20

Median hourly earnings of veterinary assistants were \$7.79 in 1998. The middle 50 percent earned between \$6.55 and \$9.23 per hour. The lowest 10 percent earned less than \$5.79 and the top 10 percent earned more than \$10.80 per hour.

Related Occupations

Others who work extensively with animals include animal breeders, animal trainers, livestock farm workers, ranchers, veterinarians, veterinary technicians and technologists, and wildlife biologists and zoologists.

Additional Information

For more information on jobs in animal caretaking and control, and the animal shelter and control personnel training program, write to:

- The Humane Society of the United States, 2100 L St. NW, Washington, DC 20037-1598. Internet: <http://www.hsus.org>.

- National Animal Control Association, P.O. Box 480851, Kansas City, MO 64148-0851.

To obtain a list of state-licensed grooming schools, send a stamped, self-addressed envelope to:

- National Dog Groomers Association of America, Box 101, Clark, PA 16113.

For information on training and certification of kennel staff and owners, contact:

- American Boarding Kennels Association, 4575 Galley Rd., Suite 400A, Colorado Springs, CO 80915. Internet: <http://www.abka.com>.

For information on laboratory animal technicians and certification, contact:

- American Association for Laboratory Animal Science, 9190 Crestwyn Hills Drive, Memphis, TN 38125.

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Chapter 30



Miscellaneous Health-Related Professions

Key Terms

Biological photographer	Autopsy/specimen photography
Ophthalmic photography	Medical and scientific illustrators
Photomicrography	Medical, science, and technical writers
Cinematography	Medical secretary
Dental photography	

The general public has a strong interest in health, medicine, and science and desires information about them. People want to understand what is happening and how new developments will affect their lives and careers. Advanced communication technology has made delivery of this knowledge possible; the publishing and broadcast media provide both oral and written materials in these fields.

In addition, public and private organizations and agencies have a professional interest in keeping the public informed. They know that people who are informed about current developments and discoveries in health and medicine show more initiative in getting medical, dental, and preventive care for their families and themselves. These agencies and organizations also want to keep the public interested and involved in starting and supporting adequate health care facilities in the form of community hospitals, clinics, and mobile screening units.

In addition to the general public, there are other more specialized groups seeking health information. These individuals include the various health professionals who require authoritative information to keep abreast of developments in their fields. There are many career opportunities in health information and communications; the following pages discuss the qualifications and duties of biological photographers, medical writers, science writers, technical writers, and medical illustrators.

Another important part of health information and communications is maintaining medical records and data for various health facilities. Typically, a health facility employs a staff consisting of a medical record administrator, medical record technician, medical transcriptionist, and other clerical personnel to handle all facets of medical information. They prepare medical reports; organize, analyze, and preserve the medical information of patients; and

develop a variety of statistical reports. Maintaining this flow of health information is an extremely important function, because it is used in evaluating patient care, diagnosing and treating illness, and planning health care activities. Careers involving medical records and data are discussed fully in Chapter 25 on health information personnel.

Library services in the health field occupy an important place in health information and communication activities. Year after year, a vast store of knowledge accumulates in many branches of medicine, in medical research, and in scientific research related to medicine. This knowledge is recorded in periodicals, textbooks, monographs, and other publications. These publications, coming from every part of the world, are collected in the medical library, where they are made available to health professionals.

Doctors, nurses, dentists, pharmacists, therapists of various kinds, technicians, and health profession students may come to the library for texts or monographs on a subject of special interest. They may search the journals for background material or for research reports on the latest developments in their fields. The medical and scientific journals are also used by research scientists and research students; these are the main sources of information on what has been done and what is currently being done in their fields.

Libraries are maintained by almost all hospitals, schools, research institutions, and pharmaceutical houses, and by many other health organizations. They vary in size and function, but all serve to maintain information needed by their staffs, students, patients, or other interested persons. See Chapter 25 for full details.

Biological Photographers

Work Description

Biological photographers are scientific professionals responsible for the production of still and motion pictures of subjects for the health professions and natural sciences. These specialists apply a complete range of photographic skills creatively to complete a variety of assignments. Their role in health information and communications is very important. They prepare and produce motion

pictures, videotapes, prints, and transparencies to document and record a broad spectrum of subjects and events used for education, patient records, and research, and as illustrations in publications. Photography is used to document the absence, presence, extent, and progress of a patient's disease or injury, and still or motion pictures are used to record and study surgical procedures. Furthermore, photographs of specimens can be magnified to serve as records or to illustrate medical conditions for use in classrooms, courtrooms, or research laboratories. Biological photographers also participate in the planning, coordination, production, and dissemination of educational programs encompassing both visual and auditory media, and they are key personnel in any project in which recording of diagnosis, treatment, special technology, or any other aspect of health care is critical.

A biological photographer can specialize in one of several areas. *Ophthalmic photography*, for example, involves the use of specialized equipment and techniques to photograph disorders and injuries of the eye; *photomicrography* involves photographs taken through a microscope; and cinematography is the production of motion pictures. Other specializations include *dental photography*, which records dental techniques and procedures, and *autopsy/specimen photography*, in which postmortem or surgical specimens are documented.

Biological photographers are employed by many public and private hospitals; universities; medical schools; federal health organizations; research institutions; dental, veterinary, or natural science facilities; and some private medical and pharmaceutical suppliers. For the most part, they work regular hours, within normal hospital, office, or laboratory environments, and are not normally required to travel extensively. Occasionally, the physical conditions under which a biological photographer works change quite dramatically. For instance, he or she may spend some working time in close contact with patients, doctors, and staff members and some time in isolation, working in the darkroom. Biological photographers may also come in contact with harmful chemicals, strong odors, and contagious diseases when carrying out assignments. The biological photographer must, therefore, have the ability to adapt to a wide range of tasks and environmental conditions in addition to being skilled and creative in this profession.

Educational and Legal Requirements

There are several ways to prepare for a career in biological photography. A number of colleges and universities offer full four-year programs leading to a bachelor's degree in this field. Other educational institutions provide training in two-year programs and grant a certificate or associate's degree. One of the accrediting agencies for these training programs is the Biological Photographic Association. Many individuals acquire skills in this work by successfully completing on-the-job or apprenticeship training programs, which may last up to two to three years.

Certification in this field is not mandatory, but those seeking certification can obtain it through the Board of Registry of the Biological Photographic Association. The prerequisites for certification are two years of satisfactory employment or training in an accredited school, plus successful completion of a three-part examination. Many employers determine general requisites before making final education or training arrangements for their employees.

Employment Opportunities

Growth in biological photography is quite rapid and is closely related to the entire health care industry, the growth of medical education, and the increased documentation requirements of government and independent agencies. Because photography occupies an increasingly significant place in scientific and medical research and education, opportunities are expected to be favorable for these specialized skills.

Advancement opportunities in this field, as in many other health career areas, depend on the individual system worked out by the employer. Government agencies usually have career ladders with several steps, each of which represents an advancement opportunity. Private industry and education may have other opportunities. The biological photographer typically advances from photographic technician through photographer positions to department or service head. Possibilities also include general health facility administration or related positions in education for individuals with advanced degrees or experience.

Additional Information

For further information, contact:

- Biological Photographic Association, 115 Stoneridge Dr., Chapel Hill, NC 27514.

Medical Illustrators

Work Description

Medical and *scientific illustrators* combine artistic skills with knowledge of the biological sciences. Medical illustrators draw illustrations of human anatomy and surgical procedures. Scientific illustrators draw illustrations of animals and plants. This artwork is used in medical and scientific publications and in audiovisual presentations for teaching purposes. Medical illustrators also work for lawyers, producing exhibits for court cases and doctors.

Medical illustrators can best be described as paramedical artists who illustrate medical or biological subjects, using many types of visual presentations. Historically, detailed and complicated drawings of life systems were done by artists because drawings were the only means available to capture and communicate the essence of scientific subjects. At one time, the illustrator's work was limited to drawings and charts for medical journals, textbooks, monographs, and similar publications. Later, additional technical training became necessary as a variety of graphic arts techniques began to be used to illustrate surgical procedures, anatomical and pathological specimens, clinical disorders, and microorganisms.

The health professions depend on the illustrator to produce visual presentations for their own use and for the public. Scientific illustrations are now widely used in general magazines, professional journals, textbooks, exhibits, and pamphlets. Medical education relies heavily on the work of medical illustrators, and with recent advancements in instructional technology, using specially prepared audiovisual materials for teaching in medical and health sciences, the medical illustrator's role of visual interpretation has expanded into a variety of new applications. For the most part,

medical illustrators are employed by or do free-lance work for hospitals, clinics, medical schools, public and private research institutes, large pharmaceutical firms, and medical publishing houses. Regardless of where they are employed, their final illustrations must present information clearly and aesthetically.

Today's medical illustrators have broadened their scope and use drawings, models, photography, exhibits, and television to record facts and progress in many health fields, and they work with physicians, research scientists, educators, and authors. Illustrators tend to specialize along lines required by the employer. For example, a medical book publishing company may need illustrators with special photographic or illustration skills; a museum may require an illustrator with a strong background in medical sculpture. Illustrators may also work with specialists in subjects such as anatomy, pathology, embryology, and ophthalmology.

Educational Requirements

Students intending to become medical illustrators should be science minded, with the scientist's capacity for accurate observation, and they must have the ability to visualize imaginatively and persevere. Medical illustrating is not a career for everyone interested in art. High school studies should include biology, other science courses, foreign languages, and courses in design. Students should evidence interest in various graphic art forms—still life drawing in particular—and maintain a portfolio demonstrating ability in several media. Programs of education for medical illustrators require six to seven years of college-level study beyond the high school level.

The appropriate training and education for prospective medical illustrators are very specific. Medical illustrators must have both a demonstrated artistic ability and a detailed knowledge of living organisms, surgical and medical procedures, and human and animal anatomy. A four-year bachelor's degree combining art and premedical courses is usually necessary, followed by a master's degree in medical illustration. This degree is offered in only five accredited schools in the United States, as described later in this section.

Individuals applying to medical illustration schools go through personal interviews and must present a portfolio of drawings demonstrating their talent in life drawing and design and techniques such as stipple drawing, pen and ink, and watercolor. The master's degree curriculum includes courses in photography, advanced anatomical sketching, medical and television graphics, gross human anatomy, and techniques of molding.

The Association of Medical Illustrators has established minimum accreditation standards for the professional training of a medical illustrator, and only five U.S. schools thus far have received accreditation: the Medical College of Georgia (Augusta, Georgia), University of Illinois College of Medicine (Chicago), Johns Hopkins University School of Medicine (Baltimore, Maryland), University of Michigan School of Medicine (Ann Arbor, Michigan), and University of Texas Health Science Center at Dallas. Each school accepts between 3 and 12 students per year. An individual seeking membership in the Association of Medical Illustrators must be a graduate of an accredited program or have at least eight years of experience in the profession. In addition, the individual must submit a portfolio of medical art that meets the standards of the association. Because employers rely on the Association of Medical Illustrators to set paraprofessional standards and announce open positions through its organization, membership in this association is useful.

Employment Opportunities

Employment opportunities for medical illustrators are favorable, and promotional prospects are best for the illustrators with master's credentials and membership in a recognized professional association. Accomplished illustrators may become directors and assistant directors of medical illustration service units in teaching medical centers. Master's degree illustrators who hold positions in centers can advance to full professor or serve as audiovisual coordinators of subordinate illustrators, photographers, and writers.

Additional Information

For information on careers in medical illustration, contact:

- Association of Medical Illustrators, 2965 Flowers Road South, Suite 105, Atlanta, GA 30341.

For a list of schools offering degree programs in graphic design, contact:

- The American Institute of Graphic Arts, 164 Fifth Ave., New York, NY 10010.

Writers: Medical, Science, and Technical

Individuals with good communications skills, a basic knowledge of life sciences, and an interest in health care or in medical research and development are finding career opportunities as *medical writers* in the mass media, the medical press, industry, hospitals, medical schools, and other settings. Technological, clinical, and sociological changes in the field of medicine and health are occurring at an unprecedented rate. As a result, both health care professionals and the general public represent vast audiences for medical news, information, and instructional material at virtually all levels of sophistication and in all media.

Work Description

In response to the public's keen interest in medicine and health, many newspapers, magazines, radio stations, and television stations employ trained journalists who function as *science writers* and specialize in interpreting scientific and technical developments for the general public. Their job is to acquaint the public with what is happening in the field of medicine: new treatments for cancer or heart disease, improved surgical techniques, research gains for the mentally ill, and changing concepts of health care. Like other science writers in the mass media, medical writers not only report, but also

interpret. Unlike sports writers, whose audience is already familiar with the subject, writers in the health field must explain new and complex developments in nontechnical terms that can be readily understood by a lay audience. Moreover, because of the critical nature of the subject, medical writers must be meticulously accurate and objective in presenting facts. The physicians, scientists, and health administrators to whom medical journalists look for information will hesitate to talk freely unless they know the writers are competent and trustworthy. Similarly, the confidence of the public depends on the writers' caution and integrity. Because these writers deal with experts from every branch of medicine and related disciplines, they must have at least a speaking acquaintance with the health sciences. Medical writers might interview neurosurgeons one day, pharmacologists the next, and biomedical engineers the next. They ask pertinent questions, weigh the value of the answers, and obtain additional supporting evidence. Finally, they present the information in a way so it will not be misunderstood.

Other medical writers with training or experience in journalism—or in its “sister” discipline, public relations—are employed by hospitals, clinics, medical schools, voluntary health agencies, and medical societies as health information specialists. These communicators are responsible for keeping the public as well as their organization's personnel, clients, and supporters informed about the achievements, programs, and concerns of the organization. To generate and sustain good public relations, health information specialists may develop informational brochures, plan exhibits, publish “in-house” newsletters and magazines, and arrange for media coverage. To accomplish these tasks, health information specialists must have working knowledge of almost every medium of communication.

Medical writers sometimes function as *technical writers* specializing in reporting and writing about scientific and technical developments, primarily for users. In industry, and to a lesser extent in nonprofit medical research laboratories, there is growing demand for individuals who have a basic knowledge of electronics, biochemistry, or other technical subjects, as well as good communication skills and an interest in medicine and health. Developers and manufacturers of sophisticated diagnostic and treatment devices such as electrocardiographs, computerized imaging systems, heart-lung machines, and hemodialysis equipment employ medical writers in a variety of capacities. As in other settings, scientists, engineers, and health professionals working in industry rarely have

the proficiency and time to meet all needs for scientific and technical information—hence the demand for medical communicators who can digest complex source material and write clearly and accurately for diverse audiences. Medical writers may produce promotional literature for health professionals and administrators or educational information for patients. Like other technical writers, they may prepare instruction manuals for operating and maintenance technicians, proposals, or reports for scientists and engineers, for management, or for a company's stockholders. With the increasing application of computers in medicine, some medical writers are now involved in development of software. To become familiar with their subject, these writers may study technical books, journals, working papers, and mathematical data; interview scientific personnel; or tour laboratories, hospitals, and field stations. Often they simply work with the "raw material" provided by scientists, engineers, and health professionals.

Medical writers may find similar career opportunities in the pharmaceutical industry, which invests great amounts of money in research and development of new drugs and new applications for existing drugs. Pharmaceutical companies have an ongoing need for individuals who can assist in documenting and reporting new discoveries and in promoting product lines. Pharmaceutical writers may prepare abstracts of journal articles, package inserts (descriptions of a drug's actions, indications, contraindications, and side effects), or reports of research findings. They may write market research reports or articles for in-house periodicals. Those with a creative bent may produce sales brochures, advertising copy, or other promotional material; scripts for educational films or closed-circuit broadcasts; or exhibits to be displayed at medical conferences. Like their counterparts in the medical equipment industry, pharmaceutical writers use all possible sources to become familiar with their subject.

Medical writers are employed by government agencies, companies that publish newspapers and magazines for health professionals, advertising agencies, film and art studios, and book publishing companies.

Within most settings there are opportunities for communicators at all levels of experience and expertise—and, quite often, for free-lancers, who are hired for specific assignments as the need arises. Responsibilities in the field of medical writing span a wide range. At one end of the spectrum are such critical but relatively

simple tasks as editing others' writing to ensure grammatical correctness and clarity of presentation, checking the accuracy of references, or proofreading. At the other end is such challenging and sophisticated work as writing books on medical subjects for lay persons, directing a corporate publications department, or designing and managing a new periodical.

Work Environment

In general, medical writers work in comfortable and well-lighted surroundings. They usually work a 40-hour week but may be called on to put in additional hours to meet publication deadlines.

Educational Requirements

Medical writing is not a well-defined profession with a prescribed course of training and a standardized licensing or certification procedure. On the contrary, it is a field characterized by its practitioners' diversity of background, expertise, and professional responsibilities and activities.

The 1990s saw a proliferation of college and university courses in medical writing and in the closely related areas of health education, scientific communication, and technical writing. Few medical writers, however, have had formal training in their specialty. Most continue to enter the field through "the back door."

Medical research reports, textbooks, and other highly technical materials are often written by physicians, allied health professionals, or scientists. The great majority of medical writers do not have advanced training in a health care discipline.

While there are no uniform standards for entry into the field, a bachelor's degree from a four-year college is generally considered a minimum requirement. To develop the background and skills essential to a medical writing career, students should take as many courses as possible in the life sciences and in English composition, journalism, or related discipline. In addition, a few basic courses in electronics, electrical, and mechanical engineering or in basic physics can be useful. Although graduate education is not a formal

requirement, more and more medical writing jobs are going to individuals with advanced degrees in scientific, medical, or communication specialties.

Perhaps more important than a specific educational background are personal characteristics such as the ability to think clearly and precisely, to pay close attention to detail, to handle the English language with ease, and to deal comfortably with a variety of people.

Employment Opportunities

Employment prospects in this field are favorable. Opportunities for qualified medical writers tend to grow in direct proportion to accumulation of new data from basic research and clinical studies, increasing sophistication of both experimental and clinical technology, growing use of audiovisual teaching techniques, increasing numbers of medical conferences and workshops, growth of medical specialty journals and news publications for health professionals, need for more frequent updating of medical textbooks, greater use of computers in medicine, creation of new abstracting and indexing services, and mounting public interest in health-related information and issues. In this era of increasingly complex diagnostic techniques, constant therapeutic discoveries, growing interest in prevention of disease and disability, and enormous expenditures on health care services and products, the need for well-trained and informed medical writers has never been greater. However, because many people are interested in this type of career, there may be heavy competition for jobs, especially in the mass media. Individuals considering a career in medical writing should carefully evaluate the labor market in the area in which they intend to work.

As in most professions, the skills helpful for entry may not be sufficient for advancement. For example, a recent college graduate with a major in biology, a minor in English, and perhaps some typing ability may find employment as an editorial assistant in a research laboratory or in a medical publishing house. To advance to a position such as director of communications for a research laboratory or series development editor for a medical publisher, the individual would have to acquire additional knowledge of medicine, become expert in many facets of communication, and

develop whatever other skills may be required in a particular setting or particular medium. Skills necessary for advancement may be acquired through continuing education, practical experience, or both. In general, those who advance in this field are avid readers, careful researchers, meticulously accurate writers, flexible stylists who can adapt to the requirements of various media, and disciplined and dedicated workers who recognize the importance of deadlines.

Additional Information

For further information, contact:

- American Medical Writers Association, 919 N. Michigan Ave., Chicago, IL 60611.
- National Association of Science Writers, P.O. Box 294, Greenlawn, NY 11740.

Medical Secretaries

Work Description and Environment

Medical secretaries work in private medical offices, hospitals, clinics, group practices, and other health facilities. Their responsibilities are limited to administrative and clerical duties, and they are not trained to assist physicians with clinical or laboratory tasks. Medical secretaries are primarily responsible for the orderly, efficient operation of the office. Typical duties include keeping individual medical records, taking simple medical histories, filling out insurance forms, and billing patients for medical services. They also schedule appointments for patients, arrange for patients to be hospitalized, handle telephone inquiries, and act as receptionists for incoming patients. Medical secretaries take dictation and type correspondence, reports, and manuscripts. They may also do bookkeeping, prepare financial records, and handle credit and collections for their employers.

Medical secretaries generally work in pleasant surroundings in modern medical offices. Their work is often performed under pressure and requires patience and tact at all times in dealing with patients.

Educational and Legal Requirements

Persons considering this career should be high school graduates or the equivalent, preferably with courses in English, biology, typing, and familiarity with or knowledge of computer word processing, spreadsheets, and database programs. A sound knowledge of spelling, punctuation, grammar, and vocabulary is also important. One- or two-year programs in secretarial science, with a medical option, are given by accredited vocational schools and junior or community colleges. Graduates of one-year programs receive certificates, those in two-year programs are awarded the Associate in Applied Science degree. While post-high school education is not required for all beginning jobs in this field, it may be helpful in gaining initial employment and for job advancement.

In some cases, persons with secretarial experience in other fields prepare for this career by taking medical terminology and related courses as part of a continuing education program. Although there are no licensing requirements for this work, many medical secretaries apply on a voluntary basis for certification. By passing a series of examinations administered by the National Secretaries Association, medical secretaries are given the designation Certified Professional Secretary (CPS). This designation is regarded by employers as a mark of competence in the field.

Employment Opportunities

Employment prospects for qualified medical secretaries are expected to be quite favorable. This outlook is based on increased public demand for health services; the expansion of medical facilities, HMOs, and group medical practices; and broader insurance coverage by government-sponsored and private health insurance

plans. Qualified medical secretaries can advance to such positions as administrative assistant or office manager.

Additional Information

For further information, contact:

- National Secretaries Association, 301 E. Armour Blvd., Kansas City, MO 64111.

Appendix A



Salaries for Health Professions: A Comparison Chart

Salaries, 1998 ¹	Profession	Projected Salaries, 2002 ²
\$164,000–250,000/yr.	Physician	\$180,400–275,000/yr.
\$110,000–160,000/yr.	Dentist	\$121,000–176,000/yr.
\$22.06–38.81/hr.	Dental hygienist	\$24.26–42.69/hr.
\$10.90/hr.	Dental assistant	\$11.99/hr.
	<i>Registered Nurse</i>	
\$40,690/yr.	Staff RN	\$44,759/yr.
\$49,070/yr.	Specialist RN	\$53,977/yr.
	<i>Practical Nurse</i>	
\$25,300/yr.	Hospital LPN/LV/UN	\$27,830/yr.
\$26,200/yr.	Nursing home	\$28,820/yr.
\$66,200/yr.	Pharmacist	\$72,820/yr.
\$8.00–8.88/hr.	Pharmacy technician/aide	\$8.80–9.70/hr.
\$34,900–45,200/yr.	Dietitian	\$39,160–45,625/yr.
\$20,001–30,001/yr.	Dietetic technician	\$22,385–33,001/yr.
\$68,500–93,700/yr.	Optometrist	\$75,350–123,070/yr.
\$22,440–28,560/yr.	Optician	\$22,664–31,344/yr.
\$20,680/yr.	Medical assistant	\$19,901/yr.
\$47,090–71,450/yr.	Physician assistant	\$51,799–78,595/yr.
\$42,000–44,000/yr.	Speech-language pathologist/audiologist (both)	\$46,200–48,400/yr.
	<i>EMT</i>	
\$19,900/yr.	Hospitals, etc., Basic	\$21,890/yr.
\$34,480/yr.	Paramedic	\$36,300/yr.
\$34,830/yr.	Respiratory therapist	\$38,313/yr.
\$25,950/yr.	Respiratory technician	\$28,545/yr.
\$56,600/yr.	Physical therapist	\$62,260/yr.
\$21,870/yr.	Physical therapy assistant/aide	\$24,057/yr.
\$48,230/yr.	Occupational therapist	\$53,053/yr.
\$28,690/yr.	Occupational therapy assistant/aide	\$31,559/yr.
\$27,760/yr.	Recreational therapist	\$30,536/yr.
	Music therapist ³	
	Dance therapist ³	
	Horticulture therapist ³	
	Art therapist ⁴	
\$30,590/yr.	Health care worker	\$33,649/yr.
\$21,360/yr.	Human service worker/assistant	\$23,496/yr.
\$48,050–70,870/yr.	Psychologist	\$52,855–77,957/yr.

Salaries, 1998 ¹	Profession	Projected Salaries, 2002 ²
\$8.33-13.36/hr.	Psychiatric aide/assistant	\$9.16-14.70/hr.
\$50,950-106,370/yr.	Veterinarian	\$56,045-117,007/yr.
\$61,600/yr.	Federal government	\$67,760
\$7.79-10.80/hr.	Veterinarian assistant	\$8.57-11.88/hr.
\$7.12-10.40/hr.	Animal caretaker	\$7.83-11.44/hr.
\$32,880/yr.	Radiology technologist/ technician	\$36,168/yr.
\$32,440-39,810/yr.	Clinical laboratory technologist	\$35,684-43,791/yr.
\$24,800-26,600/yr.	Clinical laboratory technician	\$27,280-29,260/yr.
\$35,770/yr.	Cardiovascular technologist	\$39,347/yr.
\$25,700/yr.	Cardiovascular technician	\$28,270/yr.
\$25,780/yr.	Surgical technician	\$28,358/yr.
\$9.70-13.70/hr.	Athletic trainer	\$10.67-15.07/hr.
	Health Educator ⁴	
	Caretaker ³	
\$48,870-88,730/yr.	Health services manager	\$53,757-97,603/yr.
\$60,000-124,500/yr.	MCO manager	\$66,000-136,950/yr.
\$44,800-60,300/yr.	Nursing home administrator	\$49,280-66,330/yr.
\$35,200-58,000/yr.	Inspector/compliance officer	\$38,720-63,800/yr.
\$38,470/yr.	Medical librarian	\$42,317/yr.
	Medical illustrator	
\$25,430/yr.	Medical transcriptionist ⁴	\$27,973/yr.
	Medical writer ³	
	Medical secretary ⁴	
\$48,870/yr.	Health information administrator	\$53,757/yr.
\$20,590/yr.	Health information technician	\$22,649/yr.

1. The 1998 salaries are from *Occupational Outlook Handbook*, U.S. Department of Labor Statistics, May 2000-2001. Earnings vary with experience, level of responsibility, performance, industry, amount of unionization, and geographic area. Salaries shown are net income averages. No attempt is made to show variance by specialties.

2. The authors made an assumption of a 10 percent increase between 1998 and 2001. With the health care fields in a transition period, it is difficult to make clear predictions.

3. No salary ranges are available for these professions due to a lack of comparable data and a lack of a standard earning scale.

4. No figures are given for these professions because salaries vary widely due to geographic location, education, experience, specialized services rendered, and whether the practitioner is self-employed or part-time.

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Appendix B



Sources of Career Information

This appendix is provided for student use from the *Occupational Outlook Handbook, 2000–2001* edition. Listed below are several places to begin collecting information on careers and job opportunities.

Personal Contacts

The people close to you—your family and friends—can be extremely helpful in providing career information. They may be able to answer your questions directly or put you in touch with someone else who can. Networking can lead to meeting someone who can answer your questions about a specific career or company, and who can provide inside information and other helpful hints. It is an effective way to learn the type of training necessary for a certain position, the way in which someone in that position entered the field, the prospects for advancement, and aspects of the work that the person likes and dislikes.

Public Libraries, Career Centers, and Guidance Offices

These institutions maintain a great deal of up-to-date material. To begin your library search, look at the computer listings under “vocations” or “careers” and then under specific fields. Check the periodicals section, where trade and professional magazines and journals about specific occupations and industries are located. Become familiar with the concerns and activities of potential employers by skimming their annual reports and other public documents. Occupational information on video cassettes and through computerized information systems or the Internet can be valuable. Don’t forget the librarians; they can be a great resource and can save you valuable time by directing you to relevant information.

Check your school’s career centers for resources such as individual counseling and testing, guest speakers, field trips, books, career magazines, and career days.

Always assess career guidance materials carefully. The information should be current and objective. Beware of materials that seem to glamorize the occupation, overstate the earnings, or exaggerate the demand for workers.

Counselors

Counselors are professionals trained to help you discover your strengths and weaknesses, evaluate your goals and values, and help you determine what you would like in a career. Counselors will not tell you what to do, but they may administer interest inventories and aptitude tests, interpret the results, and help you explore various options. They may also discuss local job markets and the entry requirements and costs of schools, colleges, or training programs.

Counselors are found in:

- High school guidance offices
- College career planning and placement offices
- Placement offices in private vocational or technical schools and institutions
- Vocational rehabilitation agencies
- Counseling services offered by community organizations
- Private counseling agencies and private practices
- State employment service offices

Before employing the services of a private counselor or agency, you may want to seek recommendations and check their credentials. The International Association of Counseling Services (IACS) accredits counseling services throughout the country. To receive a listing of accredited services for your region, send a self-addressed, stamped, business-size envelope to:

- IACS, 101 South Whiting St., Suite 211, Alexandria, VA 22304.

The Directory of Counseling Services, an IACS publication providing employment counseling and other assistance, may be available in your library or school career counseling center. A list of certified career counselors by city or state is available from:

- National Board of Certified Counselors, 3 Terrace Way, Suite D, Greensboro, NC 27403-3660. Phone: (336) 547-0607.

Internet Networks and Resources

The growth of on-line listings has made countless resources instantly available at any time. Most companies, professional societies, academic institutions, and government agencies maintain Internet sites that highlight the organizations' latest information and activities.

Listings may include information such as government documents, schedules of events, and job openings. Listings for academic institutions often provide links to career counseling and placement services through career resource centers, as well as information on financing your education. Colleges and universities also offer on-line guides to campus facilities and admission requirements and procedures.

The career information that is available through the Internet matches much of the information that is available through libraries, career centers, and guidance offices. However, no single network or resource will contain all desired information, so be prepared to search in many places. As in a library search, look through various lists by field or discipline, or by using keywords.

Career sites can be an excellent place to obtain information about job opportunities. They provide a forum for employers to list job openings and for individuals to post their résumés. Some Internet sites also provide an opportunity to research a particular industry or company.

America's Job Bank (AJB), administered by the U.S. Department of Labor, lists as many as 1 million job openings on any given day. These job openings are compiled by state employment service offices throughout the nation.

Professional Societies, Trade Associations, Labor Unions, Business Firms, and Educational Institutions

These organizations provide a variety of free or inexpensive career material. Many of these groups are listed in an Additional Information section of the *Handbook*. For information on occupations not covered in the *Handbook*, consult directories in your library's reference section to find the names of potential sources. You might start with *The Guide to American Directories* or *The Directory of Directories*. Another useful resource is *The Encyclopedia of Associations*, an annual publication listing trade associations, professional societies, labor unions, and fraternal and patriotic organizations.

The National Technical Information Service Audiovisual Center, a central source for audiovisual material produced by the U.S. government, sells material on jobs and careers. For a catalog, contact:

- NTIS Audiovisual Center, Springfield, VA 22161. Phone: (800) 553-6847.

Federal Government

Information on employment with the federal government is available from the Office of Personnel Management. Consult your telephone directory under U.S. Government for a local number or call (912) 757-3100 or (912) 744-2299 (TDD).

Organizations for Specific Groups

The organizations listed below provide information on career planning, training, or job opportunities prepared for specific groups. Consult directories in your library's reference center or a

career guidance office for information on additional organizations associated with specific groups.

Disabled Workers

Counseling, training, and placement services for those with disabilities is available from:

- National Business and Disability Council, 201 I.U. Willets Rd., Albertson, NY 11507. Phone: (516) 465-1515.

Blind Workers

Information on the free national reference and referral service for the blind can be obtained by contacting:

- National Federation of the Blind, Job Opportunities for the Blind (JOB), 1800 Johnson St., Baltimore, MD 21230. Phone: (410) 659-9314.

Older Workers

- National Association of Older Workers Employment Services, c/o National Council on the Aging, 409 3rd St. SW., Suite 200, Washington, DC 20024. Phone: (202) 479-1200.
- National Caucus and Center on Black Aged, Inc., 1424 K St. NW., Suite 500, Washington, DC 20005. Phone: (202) 637-8400.
- Asociación Nacional pro Personas Mayores (National Association for Hispanic Elderly), 234 East Colorado Blvd., Pasadena, CA 91101. Phone: (626) 564-1988.

Veterans

Contact the nearest regional office of the U.S. Department of Labor Veterans' Employment and Training Service or:

- Veterans' Employment and Training Service (VETS), 200 Constitution Ave. NW., Room S-1315, Washington, DC 20210. Phone: (202) 219-9116.

Women

- Department of Labor, Women's Bureau Clearinghouse, 200 Constitution Ave. NW., Washington, DC 20210. Phone: (800) 827-5335.
- Wider Opportunities for Women, 815 15th St. NW., Suite 916, Washington, DC 20005. Phone: (202) 638-3143.

Federal laws, executive orders, and selected federal grant programs bar discrimination in employment based on race, color, religion, sex, national origin, age, and handicap. Information on how to file a charge of discrimination is available from U.S. Equal Employment Opportunity Commission offices around the country. Their addresses and telephone numbers are listed in telephone directories under U.S. Government, EEOC.

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Appendix C



Résumés and Job Hunting

The organizations whose addresses are given here have agreed to provide information upon request. These organizations will answer your questions if you are thinking of a specific career. Sources of information about other occupations, financial aid, and education at the state and local level include the following:

- State occupational information coordinating committees. They may provide direct information or refer you to another source.
- Forty-six states have career information delivery systems. They use on-line computers, microcomputers, printed material, microfiche, and toll-free hot lines. These systems can be found in schools, colleges, libraries, job training sites, rehabilitation centers, and employment offices. Ask a counselor for the locations in your area.
- Some information is designed to assist special groups such as the handicapped, minorities, the blind, older workers, veterans, and women. These services may be at the state, local, or national level. Information can be obtained from the Office of Information and Consumer Affairs, U.S. Department of Labor, Room C-4331, 200 Constitution Avenue N.W., Washington, DC 20210.

Where to Learn about Job Openings*

- State employment service offices
- Civil service announcements (federal, state, local)
- Classified ads
 - Local and out-of-town newspapers
 - Professional journals
 - Trade magazines
- Labor unions

*From *Occupational Outlook*.

- Professional associations (state and local chapters)
- Libraries and community centers
- Women's counseling and employment programs
- Youth programs
- School or college placement services
- Employment agencies and career consultants
- Employers
- Parents, friends, and neighbors

Job Interview Tips*

Preparation

- Learn about the organization.
- Have specific job or jobs in mind.
- Review your qualifications for the job.
- Prepare to answer broad questions about yourself.
- Review your résumé.
- Arrive before the scheduled time of your interview.

Personal Appearance

- Be well groomed.
- Dress appropriately.
- Do not chew gum or smoke.

*From *Occupational Outlook*.

The Interview

- Answer each question concisely.
- Be prompt in giving responses.
- Use good manners.
- Use proper English and avoid slang.
- Convey a sense of cooperation and enthusiasm.
- Ask questions about the position and the organization.

Test (if employer gives one)

- Listen carefully to instructions.
- Read each question carefully.
- Write legibly and clearly.
- Budget your time wisely and don't dwell on one question.

Information to Bring to an Interview

- Social Security number
- Driver's license number
- Résumé. Although not all employers require applicants to bring a résumé, you should be able to furnish the interviewer with information about your education and previous employment.
- Usually an employer requires three references. Get permission from people before using their names. Avoid using relatives. For each reference, provide the following information: name, address, telephone number, and occupation.

The Résumé*

What Is It? It is an organized summary about you; an advertisement of you; a record of your strengths, abilities, and accomplishments. It is positive information that you want the prospective employer to know.

Its Purpose. The purpose of a résumé is to get you an interview. It serves as a reference during an interview and as a reminder of you after the interview.

Its Appearance. There are several general formats. Choose a format that best represents you (see examples). A résumé should be:

- Up to date
- Well organized—easy to read
- Concise—one to two pages long—with most important information on first page
- Informative
- Free of grammatical errors and spelling mistakes
- Neat and attractive—get attention
- Printed on good quality paper

Its Content. A résumé should contain the following information.

PERSONAL*	Name, address, phone number
OBJECTIVE*	Job title or area in which you are applying. Place it at the beginning of your résumé. State it positively—what you can do for the employer. (You may want to develop separate résumés for different objectives.)

*The information and samples in this section are from the Center for New Directions, College of Southern Idaho, Twin Falls, ID 83301.

- EDUCATIONAL*** Name of school, location, dates, degrees, or major area of study. List in reverse chronological order—most recent first. May also include grade point average (if 3.0 or higher), honors, awards, special programs, and so on.
- EXPERIENCE*** Name of company/organization/person, location, job title, description of duties, and dates of employment (month and year). List in reverse chronological order—most recent experience first. Include volunteer experience, if appropriate. Use action words to describe duties (see “Some Words about Words”).
- MILITARY*** Branch of service, dates, and brief description of duties if appropriate.
- SPECIAL SKILLS** Skills that may not be included in other information, such as foreign languages, basic computer operation, cardiopulmonary resuscitation (CPR).
- ACTIVITIES** Include memberships in school or community organizations. Indicate leadership positions if appropriate. May include professional memberships.
- ACHIEVEMENTS** State if applicable and if not listed in other information.
- HOBBIES** May be included to indicate that you are a well-rounded individual.
- REFERENCES*** Available upon request. If you feel strongly in favor of listing references, be sure to ask permission before using anyone (no relatives).

Topics marked with an asterisk (*) are necessary information. Other information may be included if it further explains your skills and abilities or gives information that you want a prospective employer to know.

NOTE: The CONTENT information applies more to the chronological format but can be adapted to other formats.

Some Words about Words

Your résumé should convey skills you can offer an employer. The words you use to describe your experience, activities, and so forth can convey the skills you have developed. These words are crucial to your purpose of obtaining a job interview. Use concrete nouns, positive modifiers, and strong action verbs. Be aware of the tone the words convey, such as sounding arrogant or opinionated. Use concise phrasing rather than complete sentences. “Advanced to” rather than “promoted to,” “earned” rather than “was given” indicate a person who does things rather than receives them.

ACTION VERBS

accelerated	directed	lectured	reduced
accomplished	earned	led	reinforced
achieved	effected	located	reorganized
adapted	eliminated	maintained	revamped
administered	employed	managed	reviewed
advanced to	established	marketed	revised
advised	evaluated	mastered	scheduled
analyzed	expanded	motivated	set up
approved	expedited	obtained	simplified
arranged	facilitated	operated	solved
built	found	ordered	streamlined
completed	generated	organized	structured
conceived	graduated	originated	supervised
conducted	implemented	participated	supported
constructed	improved	performed	taught
controlled	increased	planned	trained
converted	influenced	prepared	transferred
coordinated	initiated	programmed	translated
created	installed	proposed	utilized
delegated	instructed	proved	won
demonstrated	interpreted	provided	wrote
designed	launched	recommended	

CONCRETE NOUNS AND POSITIVE MODIFIERS

ability	competence	proficient	technical
actively	consistent	qualified	versatile
capacity	effectiveness	resourceful	vigorous
competent	pertinent	substantially	

CHRONOLOGICAL RÉSUMÉ

The chronological format is the most widely used résumé format, and professional interviewers are most familiar with it. It is a good way to highlight a steady work history, particularly if it is related to your next job target. Substitute your own summary using the headings in the following sample.

Mary Declo, R.D.
2240 Madrona Street
Twin Falls, ID 83301
(208) 734-1212

JOB OBJECTIVE:	Position in Clinical Dietetics with a teaching institution.
EDUCATION:	Supervised Internship.
Jan. 1998–Dec. 1999	Feb. 1999: Passed national registration examination
Sept. 1993–Dec. 1997	Mankato State University, Mankato, MN 56002
	Graduated: B.S. in Food & Nutrition with emphasis in nutrition counseling
EMPLOYMENT:	Consulting Dietitian, 165-bed nursing home
Jan. 1999–Aug. 2002	
May 1997–Dec. 1998	Bariatrics Clinic: conducted nutritional assessments and provided teaching materials
Sept. 1996–May 1997 (part-time)	Marriott Food Service: residential dining and catering services
1995–1996 (part-time)	Mankato University Catering Services. Involved in sales and promotion
SPECIAL SKILLS:	Typing, computer operation, supervision, bookkeeping
ACTIVITIES:	Intramural softball and volleyball
REFERENCES:	Available upon request

FUNCTIONAL RÉSUMÉ

A functional résumé is a good way to display your qualifications if you have impressive responsibilities and job titles in your occupational cluster. Experience and education are listed in order of importance. Employers are named and dates are not mentioned.

Mary Warner
249 Crestview Drive
Twin Falls, Idaho 83301
(208) 734-1357

CAREER OBJECTIVE

Responsible sales representative position in fashion boutique. Desire to utilize my marketing and communication skills in-house and in the public arena to increase sales of boutique goods.

EXPERIENCE

Clothing Bank Coordinator

Initiated, organized, and directed local clothing bank for two years part-time. During second year of operation, YMCA grossed \$15,000, and I netted a profit of \$8,000.

Sales Representative

Displayed, ordered, and sold sportswear fashions for the Valley Country Club members. Developed public relations brochure and customer service program.

COMMUNITY ACTIVITY

United Fund District Leader

Coordinated work among block captains. Obtained area merit prize for exceeding quota by 200%.

HOBBIES & INTERESTS

Fashion design, sewing, macrame, and needlepoint

EDUCATION

College of Southern Idaho, Twin Falls, Idaho. Degree in Business Administration—May 1995. Additional classes in mid-management and fashion merchandising. Dean's list—2 years.

REFERENCES

Furnished upon request.

LETTER RÉSUMÉ

The letter format is of special interest to those people who have minimum job experience or too many job changes, or who have been out of work for a long time. It stresses the employer's needs and your ability to meet them. It combines the purpose of a cover letter and a résumé.

May 19, 2002

Mr. Sheldon Daniels
Vice-President, Marketing
Great Wood Products
4231 Kimberly Road
Twin Falls, ID 83301

Dear Mr. Daniels:

Bort Carlson suggested that I contact you concerning a position in your marketing department, in which I could make a significant contribution. My marketing accomplishments include the following:

- As assistant to fund-raising director for United Way, divided the territory into districts based on census figures and estimated contributions by district with 92 percent accuracy. This resulted in considerable cost savings in subsequent campaigns.
- As part-time market research supervisor for a local printing company, determined viability of introducing three new services. Supervised three part-time researchers in house-to-house survey. Survey reports were vital to later marketing.
- In the last three statewide elections, coordinated a political party's vote analysis program in my district.
- Sold Avon products (part-time) for eight years. Always was in top ten of region.
- My formal training in marketing includes:
B.A.—Idaho State University—major in Economics.
A.A.S.—College of Southern Idaho—degree in Mid-Management;
Additional classes in computer operation.

I am confident I can be a valuable addition to your marketing staff and would appreciate the opportunity to meet with you within the next few days. I'll call for an appointment.

Sincerely yours,

Barbara H. Ashford

Barbara H. Ashford

TARGETED RÉSUMÉ

This format is best for targeting one clear, specific job (you would have a different résumé for each target). It lists only capabilities and supporting accomplishments that relate to the job target listed at the top.

DEBORAH K. MAXELL
220 W. E Street
Twin Falls, Idaho 83301
(208) 733-1234

JOB TARGET: EXECUTIVE SECRETARY TO PRESIDENT

Capabilities:

- Create and maintain a simple, highly workable file system.
- Supervise office staff.
- Handle high-pressure phone calls.
- Compose and prepare routine correspondence.
- Prepare financial and other reports.
- Handle purchasing for large office.
- Handle travel and hotel arrangements.

Responsibilities:

- Supervised staff including assistant, receptionist, steward, and wire operator.
- Assisted with daily cash placement.
- Planned itineraries, arranged trips.
- Assisted with editing of financial reports.
- Maintained business and personal calendars.
- Took dictation.
- Arranged installation of electronic quotation equipment for 100 branch offices.
- Arranged bank loans for firm officers.

Work History:

- 2002–Present AZOR CORPORATION—Executive Secretary to Vice President, Finance
- 1998–1999 GENERAL SECURITIES CORPORATION—Executive Secretary and Personal Secretary to Vice President
- 1994–1998 JASON-WALKER INC.—Executive Secretary to Executive Vice President

Education:

- 1994 BOISE STATE UNIVERSITY, Boise, Idaho
General Classes
- 1991 COLLEGE OF SOUTHERN IDAHO, Twin Falls, Idaho. Certificate of Applied Science in General Secretarial Studies

QUALIFICATIONS RÉSUMÉ

The qualifications résumé allows you to cluster your skills and abilities and highlight your qualifications to support your career goal. It is good to use when your qualifications are more impressive than your education and employment history.

SAMUEL JOHNSON
220 OAKRIDGE DRIVE
TWIN FALLS, IDAHO 83301
(208) 733-1122

CAREER OBJECTIVE
Management Service Trainee for a Resort Hotel
in the Pacific Northwest

- QUALIFICATIONS
- Managed thirty-unit apartment complex for three years.
 - Supervised catering services for a variety of community organization activities.
 - Directed fund drive successfully to acquire monies for a United Way Campaign.

AREAS OF EXPERIENCE
Manager Caterer Financier
Supervisor Public Relations Director

EDUCATION
College of Southern Idaho, Twin Falls, Idaho
Associate of Applied Science Degree
Mid-Management

HONORS AND ACTIVITIES
President of College of Southern Idaho DECA
Association, one year

WORK EXPERIENCE

SUPERVISOR Blue Lakes Catering Service, Twin Falls, Idaho.
Supervise banquet staff, plan menus, design seating arrangements and decor, schedule events. 2002–Present

MANAGER City View Condominiums, Twin Falls, Idaho. Managed apartment complex. Collected rent, maintained grounds and buildings, planned social events, and assisted tenants. 1998–2002

ASSISTANT MANAGER Snake River Inn, Twin Falls, Idaho.
Customer service; operated cash register; performed some recordkeeping responsibilities; ordered supplies; was responsible for scheduling, hiring, and firing of employees. 1995–1998

Tips for Job Searching via the Net

The rapid development of technology has touched almost every aspect of life, including job searching. Employment listings that used to be scattered throughout many print publications are now posted on the Internet via job boards and company Web sites. These on-line methods work equally well for recruiting employees and job seekers.

Sending résumés and job applications electronically gets your name in front of a prospective employer much faster than traditional methods.

When you plan to use the Internet to send a résumé, there are Dos and Don'ts of which you should be aware. The following list is excerpted from a Knight-Ridder News Service article:

1. First, become computer literate. Become familiar with search engines.
2. Be careful when sending a résumé. Remember that when it is posted on a job board, anyone can see it, including your current employer and any scam artists.
3. Avoid:
 - a. Sending multiple copies, (i.e., don't fax, mail, and e-mail copies at the same time to the same employer).
 - b. Fancy formatting (such as bullets, italics, etc.).
 - c. "Emotional" symbols (such as a smiley face).
 - d. Attached files: The person receiving your e-mail may not have the necessary software to read it.
4. Write formally, just as you would a written résumé. See résumé samples.
5. Clearly identify the job you are seeking by title and job number.
6. Don't overdo it just to show off your technological skills (no pictures of self, family, pets, etc.).

7. Preview your résumé: send yourself a copy before sending it out so that you can catch formatting, spelling, and grammatical errors.
8. Don't include your residential address. E-mail address is ok.

LETTER OF RESIGNATION

Always follow company policy for leaving. Usually two weeks' notice is expected, although some jobs require more notice. This gives your employer time to hire and train someone else for your job. Your employer will appreciate your offer to help train your replacement and will most likely remember your spirit of cooperation when writing a reference letter or commenting about you.

When leaving, it will help you if the company has a well-written resignation letter from you. Because of this letter, someone in the company might recall your courteous, businesslike approach and give you a good recommendation. This letter should state:

1. The date you wish to leave
2. Your reason(s) for leaving
3. Thanks for the skills you have learned
4. Your appreciation of the people with whom you have worked

Following is a sample resignation letter. Use it as a guide but make sure your letter is individual to your situation.

3567 Greentree Circle
Pleasanton, CA 94566-3133
June 18, 2002

Mr. Robert Kemper
Director of Personnel
Bendix Corporation
3826 Industrial Road
Pleasanton, CA 94566

Dear Mr. Kemper:

Please accept this letter as notice of my resignation to become effective July 1, 2002.

I have accepted a position as quality control supervisor with the RAND Corporation in San Francisco, and I am to report for work on July 14, 2002.

I would like to thank Bendix Corporation for giving me the opportunity to learn new and useful skills. Your management training program has been especially helpful.

It has been a pleasure to work for Bendix Corporation. I will always be proud to have been associated with such a fine company.

Sincerely,

Monica Stewart

Monica Stewart

Courtesy of Career Development Center, Center for New Directions,
College of Southern Idaho, Twin Falls, ID 83301.

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Appendix D



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