Stanfield's

INTRODUCTION TO HEALTH PROFESSIONS

Seventh Edition

Nanna Cross
Dana C. McWay

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HEALTH PROFESSIONS

Seventh Edition

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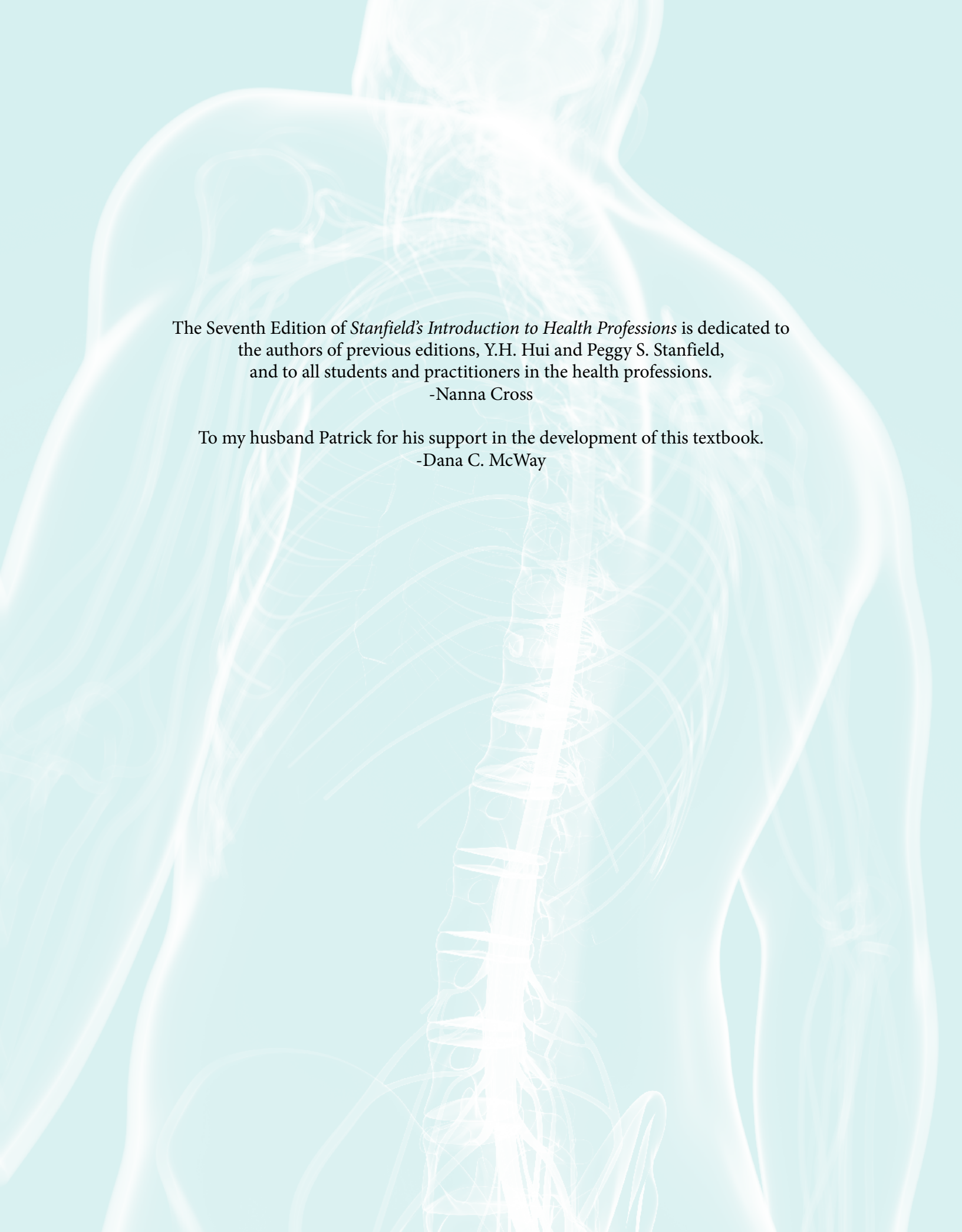

The Seventh Edition of *Stanfield's Introduction to Health Professions* is dedicated to the authors of previous editions, Y.H. Hui and Peggy S. Stanfield, and to all students and practitioners in the health professions.
-Nanna Cross

To my husband Patrick for his support in the development of this textbook.
-Dana C. McWay

CONTENTS

Note from the Authors vii
Preface viii
About the Authors ix
Reviewers xii

PART ONE THE HEALTHCARE SYSTEM IN THE UNITED STATES 1

Chapter One U.S. Health Care 3

Introduction 4
Historical Events Impacting Health Care 4
A Look Back 4
A Look Forward 5
Impact of Technology on Healthcare Services 7
Trends that Will Impact Health Services and Health Careers 8
Summary 8

Chapter Two Categories of Health Services 11

Overview of the U.S. Healthcare System 12
Categories of Healthcare Services 12
Healthcare Facilities 13
Hospitals: Development and Services 14
Ambulatory Healthcare Services 17
Mental Health Services 17
The Consumer's Rights 18
Public Health Services 18
Health Care in The Twenty-First Century 22

Chapter Three Paying for Health Services 25

Healthcare Financing 26
Reimbursement for Healthcare Services 26
Government-Funded Health Insurance 27
History of Health Insurance in the United States . . . 29
Managed Care: HMOs, PPOs, and EPOs 30
Private Health Insurance Coverage in the United States 31
Healthcare Expenditures 31
Effect on Healthcare Providers 33

Chapter Four Aging, Health, and Long-Term Care 37

The Impact of Future Demographic Changes on Healthcare Needs 38
Common Health Problems in an Aging Population 38
Medicare for Older Adults 39
Medicaid for Older Adults 40
Long-Term Services and Support (LTSs) 40
Community Long-Term Services 41
Other Community Programs for Older Adults and Disabled Persons 44
Demographic Trends and Projections 44
Personnel Needs 46
Summary 47

Chapter Five Health Care Reform. 51

Overview of Healthcare Reform 52
Timeline for Implementing the ACA 53
Challenges to Launching the Affordable Care Act 55
Supreme Court Decisions and Changes to the ACA 55
Access to Health Care Varies by State 57
The Impact of the ACA on Healthcare Cost 57
Summary 59

Chapter Six Medical and Health Information Technology 63

Introduction 64
Medical Technology 64
Health Information Technology 67
Summary 71

PART TWO JOBS AND CAREERS 73

Chapter Seven Health Career Planning 75

Introduction 76
Who Are the Healthcare Workers? 76
Projected Demand for Healthcare Personnel 77
Employers of Health Professionals 78

Exploring Health Careers 82
Health Careers: Something for Everyone 84
Using This Book to Select and Plan a Health Career 85
Additional Information 85
Study Points 87

Chapter Eight Career Development . . . 89

Introduction 90
Career Development 90
Common Core Knowledge 90
Professionalism 92
Legal Issues in Health Care 95
Continuing Education Requirements 97
Summary 97

PART THREE HEALTH PRACTITIONERS AND TECHNICIANS 99

Chapter Nine Physicians, Surgeons, and Podiatrists 101

Physicians and Surgeons: The Perceptions 102
Doctors and Surgeons: The Realities 102
Podiatrists 108
Additional Information 117

Chapter Ten Physician Assistant 113

A Relatively New Profession 114
Physician Assistant 114

Chapter Eleven Nursing 119

The Future of Nursing 120
Registered Nurses (RNs) 121
Advanced Practice Registered Nurses (APRNs) . 126
Licensed Practical and Licensed Vocational Nurses 132

Chapter Twelve Dentistry 137

Dentists 138
Dental Hygienists 141
Dental Assistants 144
Dental Laboratory Technicians 147

Chapter Thirteen Dietetics 151

Dietitians and Nutritionists 152
Dietetic Technicians 157
Dietetic Assistants 160
Additional Information 160

Chapter Fourteen Pharmacy 163

Pharmaceutical Partners 164
Pharmacists 164
Pharmacy Technicians and Aides 168

Chapter Fifteen Optometry 173

Optometrists 174
Optician, Dispensing 177
Ophthalmic Laboratory Technicians 180

Chapter Sixteen Communication Impairment Professionals 183

Speech, Language, and Hearing Impairments: An Overview 184
Speech-Language Pathologists 185
Audiologists 188
Additional Information 193

Chapter Seventeen Physical Therapy, Orthotists, and Prosthetists 195

Physical Therapy and Our Health 196
Physical Therapists 196
Physical Therapist Assistants and Aides 200
Orthotists and Prosthetists 203

Chapter Eighteen Occupational Therapy 207

Occupational Therapists 208
Occupational Therapy Assistants and Aides . . . 213

Chapter Nineteen Athletic Trainers and Exercise Physiologists 217

Sports Medicine—An Introduction 218
Athletic Trainers 218
Exercise Physiologists 223
Additional Information 225

Chapter Twenty Mental Health Professionals 227

Introduction 228
Psychologists 228
Substance Abuse and Behavioral Disorder Counselors 233

Chapter Twenty One Social Workers . 239

Introduction 240
Social Workers 240
Social and Human Service Assistants 245
Additional Information 248

Chapter Twenty Two Genetic Counselors 251

Genetic Counselors 252

Chapter Twenty Three Health Education 257

Health Careers Specializing in Education 258
Health Educators 258
School Health Educators 261

Community Health Workers 262
Orientation and Mobility Specialists 264
Vision Rehabilitation Therapists 266
Behavior Analysts—An Overview 269
Additional Information 270

Chapter Twenty Four Health Services Administration 273

Administration 274
The Need for Professional Management 274
Health Services Managers 274

Chapter Twenty Five Emergency Medical Technicians and Paramedics 281

High Drama in Health Care 282
EMT-Paramedics 282

Chapter Twenty Six Radiation Technology 287

X-Rays and Beyond 288
Radiologic Technologists and Technicians 288
Radiation Therapists 291

Chapter Twenty Seven Diagnostics and Related Technology 297

Introduction 298
Diagnostic Medical Sonographers 298
Cardiovascular Technologists and Technicians .. 302
Nuclear Medicine Technologists 305
Surgical Technologists 308

Chapter Twenty Eight Respiratory Care Practitioners 313

Maintaining the Breath of Life 314
Respiratory Therapists 314
Respiratory Therapy Technicians 318

PART FOUR HEALTHCARE SUPPORT PERSONNEL 321

Chapter Twenty Nine Clinical Laboratory Personnel 323

The Laboratory Team 324
Clinical Laboratory Scientists and Technicians... 324
Phlebotomists 329
Additional Information 330

Chapter Thirty Massage Therapists and Recreational therapists 333

Alternative and Other Therapies 334
Massage Therapists 343
Recreational Therapists 337
Additional Information 343

Chapter Thirty One Health Information Personnel 347

Providing and Preserving Essential Information 348
Health Information Management 348
Health Information Administrators 349
Health Information Technicians 354
Medical Transcriptionists 356
Medical Librarians 359

Chapter Thirty Two Medical and Nursing Assistants..... 363

Medical Assistants 364
Nursing Assistants and Orderlies 368

Chapter Thirty Three Home, Personal, and Psychiatric Aides 373

Home Health Aides 374
Personal Care Aides 377
Psychiatric Technicians and Aides 379

PART FIVE HEALTH-RELATED PROFESSIONS 383

Chapter Thirty Four Veterinary Medicine 385

Working with Animals 386
Veterinary Medicine 386
Veterinarians 387
Veterinary Technologists and Technicians 390
Animal Care and Service Workers 393
Additional Information 396

Chapter Thirty Five Occupational Health and Environmental Science..... 399

Protecting the Worker—Protecting the Environment 400
Occupational Health and Safety Specialists 400
Occupational Health and Safety Technicians ...402
Environmental Scientists and Specialists 405
Environmental Science and Protection Technicians 408
Additional Information 410

Appendix A: Salaries for Health Professionals ..413
Appendix B: Sources of Career Information ...416
Appendix C: How to Create an Effective Résumé 420
Glossary 425
Index 451

NOTE FROM THE AUTHORS

Careers in the healthcare field are growing more rapidly than other careers because of longevity and advanced technology that has increased the number of elderly needing health care. Within health care there is a career for nearly everyone—from entry-level positions as a home health aide that require no prior training to being employed as a physician that requires 7 to 8 years of college plus an internship to enter a career.

This text is designed so that the instructor can select individual chapters for a course. Most college texts are organized to be followed from the beginning of the book through the last chapter. By contrast, instructors using this text can select only certain chapters based on the course objectives since each chapter is written to be understandable and comprehensive as a standalone. Key terms unique to health care are defined in the glossary at the end of the text and are listed at the beginning of each chapter so students can refer to the glossary as needed.

WHAT ARE THE LATEST TRENDS IN THIS MARKET?

The trend is to require a master's degree or above for entry-level professional degrees such as occupational therapy and physical therapy, and an associate's degree for support personnel in the same field. Physical therapy and occupational therapy assistants trained at the associate's level are being used to support the work of professionals because of the lower cost for their services.

Information technology is changing the way health care is delivered as well as the way consumers manage their health. Electronic health records that are accessible by professionals regardless of physical location are cost effective and improve the quality and safety of health care. Many patients now have access to lab values and other text results through a patient portal within the electronic health record. Technology also makes it possible for patients to do more self-monitoring and to communicate results back to their physician, nurse, or caseworker. For example, blood glucose and blood pressure can be monitored by the patient and the results transmitted to the health care provider.

Nanna Cross, PhD, RDN, LDN
Dana C. McWay, JD, RHIA, FAHIMA

PREFACE

Now in full-color, the seventh edition of an *Introduction to Health Professions* provides comprehensive coverage of all the major health professions. This product is designed for students who are interested in pursuing a health-related career but are still exploring and have not yet decided on a specific career. The *Seventh Edition* outlines more than 75 careers and touches on every major facet of the field, including a description of the profession and typical work settings; educational, licensure, and certification requirements; salary and growth projections; and Internet resources on educational programs and state requirements for licensure and/or certification. In addition, this resource provides a thorough review of the U.S. healthcare delivery system, managed care, healthcare financing, reimbursement, insurance coverage, Medicare, Medicaid, and the impact of new technology on healthcare services. Information on career preparation and development are also included. All chapters are updated to reflect current demographics and new policies.

HOW IS THIS BOOK ORGANIZED?

The new edition of this text has been reorganized into five sections

- **Part I—The Healthcare System in the United States**. This section provides an overview of the healthcare system in the United States, with separate chapters on categories of health services, financing health care, the impact of aging on demands for healthcare providers, health care reform, and medical and information technology.
- **NEW! Part II—Jobs and Careers**. This section focuses on career planning and career development.
- **NEW! Parts III through V** contain chapters on individual careers that are organized so that students will be able to quickly identify a particular career of interest. Each chapter is organized to follow the same general format, making it easy for students to explore many different health careers. Each chapter follows the same format with a description of the profession and typical work setting; educational, licensure and certification requirements; salary and growth projections; and Internet resources on educational programs and requirements for licensure and/or certification. For example, in the chapter on dentistry, the career is described based on the education and training requirements from most education—dentist—to least education—dental assistant. For each career within the dentistry profession, the student has access to the usual responsibilities, work setting, salary, and expected demand for that career. Each chapter lists Internet resources to explore educational programs as well as state requirements for licensure and certification options for advancing in the profession.
- **Part III—Healthcare Practitioners and Technicians.** This section is the core of the product and contains 20 chapters directed at health careers that involve direct patient contact and care, ranging from diagnosis to treatment to education and counseling and medical or surgical interventions.
- **Part IV—Healthcare Support Personnel.** This section contains five chapters directed at health careers that support or supplement other health professionals in providing ongoing care for patients—medical and nursing assistants, personal, home, and psychiatric aides; medical information technology; and massage and recreation therapy.
- **Part V—Health-Related Professions.** This section focuses on health-related professionals who usually do not have direct contact with human patients but often have an impact on human health—veterinary medicine and occupational health and environmental sciences.

ABOUT THE AUTHORS

Nanna Cross, PhD, RDN, LDN has worked as a faculty member in dietetic and physician education programs teaching clinical nutrition courses and supervising dietetic interns in clinical practicums. Dr. Cross worked as a clinical dietitian at the University of Missouri Hospitals and Clinics and as a consulting dietitian for Home Care, Hospice, Head Start and Long-Term Care facilities.

Dana C. McWay, JD, RHIA, FAHIMA is both a lawyer and a health information management professional. She works as an adjunct faculty member at Saint Louis University in the Health Informatics and Pre Law Studies programs. She serves as the Clerk of Court for the U.S. Bankruptcy Court for the Eastern District of Missouri, an executive position responsible for all operational, administrative, financial, and technological matters of the court. She has worked as both a director and assistant director of medical records in a large teaching hospital and a for-profit psychiatric and substance abuse facility. She is a past Director on the Board of Directors of the American Health Information Management Association and serves as a voting member of the Institutional Review Board at Washington University School of Medicine, from 1992 to present.

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NEW FEATURES

Professional Profiles

91

Name: Amanda, RN, ADN
Job Title: Charge Nurse
Education: Associates in Nursing; enrolled for BSN

Q: Tell us about your career progression.

A: After graduating from nursing school, I hired on at a local hospital with 113 beds and soon after found myself a charge nurse on a 31-bed high acuity telemetry unit. Diagnoses of our patients varied from congestive heart failure, myocardial infarction, cardiomyopathy, and many chest pain rule outs that resulted in other various outcomes.

I recently took a position on a 40-bed medical floor as a free charge nurse. My job now allows me to focus on the hospital's quality indicators and outcomes. I get to round on patients in the morning to determine the needs of my colleagues and the floor. I love the role I am currently in because I can advocate for patients by discussing the care they are receiving and learning ways to improve our delivery.

Q: What challenges you about your profession?

A: Nursing has been a very challenging yet fulfilling career for me. It has allowed me to develop a professional skill set, build relationships with patients, and learn on a daily basis from my peers. I have recently become engaged in community events while sitting on the Young Professional Advisory Board in my county. I have had many great opportunities while working as a registered nurse and look forward to many to come.

Q: How have you demonstrated professionalism in your career?

A: Over the years, my career has presented me with many opportunities to grow as a professional. The hospital has a clinical development program that allows nurses to put together a portfolio representing their work over time. There are many requirements including service in the community, continuing education, awards or recognition from patients, and participation in committees or improvement events that take place in the hospital. Developing this portfolio and committing to the work that it entails encourages me to view my job as a nurse as something much more. Nursing is a profession and has been elevated to that over time. As a nurse, I feel it's my obligation to continue to engage myself into my community and help represent what the profession of nursing is.

Q: Without disclosing protected health information, describe an ethical challenge you've faced and how have you addressed it.

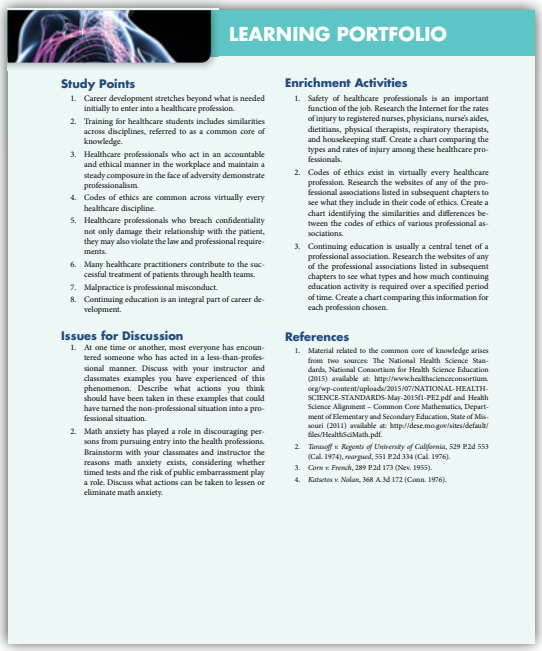
A: As a nurse I often am witness to ethical dilemmas within the acute care setting. When taking care of an elderly patient who had decided to go on hospice, I witnessed many family members who came in to visit who were not in agreement with the patient's decision. Over the course of a few days the patient had become very weak and unable to communicate. Many family members began to demand that the decision to start hospice care be reversed and that [hospital staff] resume treatment for the patient's cancer. When involved in caring for large families and patients with terminal illness, it is important to advocate for the patient. At times, it can be emotionally taxing, and your own beliefs may not agree with those of the patient; however, it's important to keep your own beliefs out of it. Ultimately, in this particular situation, my patient had paperwork that reflected his wants and needs for end-of-life care. He had made a decision to die peacefully, and my job was to allow him just that. We called a chaplain in to comfort the family and help them understand that the patient was clear about his wishes. In this case, the family just needed support to accept his wishes. Death is hard for all parties involved, but as a nurse, my first priority was advocacy for my patient.

Q: Describe the continuing education requirements for your profession.

A: Continuing education is mandated each year and can be different from unit to unit. My floor must participate in a skills lab that ensures that we are proficient in a number of clinical skills. We must also obtain eight hours of continuing education hours that we can do online or take classes within the hospital. Throughout the hospital, there are multiple types of equipment to safely transfer patients who need assistance with ambulation, so every year we have to demonstrate proficiency in safe patient handling. It is also mandatory to keep up to date a BLS [basic life support] card and in some areas ACLS [advanced cardiac life support].

Interviews with Professionals

Including Frequently Asked Question/Answer section.



LEARNING PORTFOLIO

Study Points

1. Career development stretches beyond what is needed initially to enter into a healthcare profession.
2. Training for healthcare students includes similarities across disciplines, referred to as a common core of knowledge.
3. Healthcare professionals who act in an accountable and ethical manner in the workplace and maintain a steady composure in the face of adversity demonstrate professionalism.
4. Codes of ethics are common across virtually every healthcare discipline.
5. Healthcare professionals who breach confidentiality not only damage their relationship with the patient, they may also violate the law and professional requirements.
6. Many healthcare practitioners contribute to the successful treatment of patients through health teams.
7. Malpractice is professional misconduct.
8. Continuing education is an integral part of career development.

Issues for Discussion

1. At one time or another, most everyone has encountered someone who has acted in a less-than-professional manner. Discuss with your instructor and classmates examples you have experienced of this phenomenon. Describe what actions you think should have been taken in these examples that could have turned the non-professional situation into a professional situation.
2. Math anxiety has played a role in discouraging persons from pursuing entry into the health professions. Brainstorm with your classmates and instructor the reasons math anxiety exists, considering whether timed tests and the risk of public embarrassment play a role. Discuss what actions can be taken to lessen or eliminate math anxiety.

Enrichment Activities

1. Safety of healthcare professionals is an important function of the job. Research the Internet for the rates of injury to registered nurses, physicians, nurse's aides, dietitians, physical therapists, respiratory therapists, and housekeeping staff. Create a chart comparing the types and rates of injury among these healthcare professionals.
2. Codes of ethics exist in virtually every healthcare profession. Research the websites of any of the professional associations listed in subsequent chapters to see what they include in their code of ethics. Create a chart identifying the similarities and differences between the codes of ethics of various professional associations.
3. Continuing education is usually a central tenet of a professional association. Research the websites of any of the professional associations listed in subsequent chapters to see what types and how much continuing education activity is required over a specified period of time. Create a chart comparing this information for each profession chosen.

References

1. Material related to the common core of knowledge arises from two sources: The National Health Science Standards, National Consortium for Health Science Education (2015) available at: http://www.healthscienceconsortium.org/wp-content/uploads/2015/07/NATIONAL-HEALTH-SCIENCE-STANDARDS-May-20151-PF2.pdf and Health Science Alignment – Common Core Mathematics, Department of Elementary and Secondary Education, State of Missouri (2011) available at: http://dese.mo.gov/sites/default/files/HealthSciMath.pdf.
2. *Tarasoff v. Regents of University of California*, 529 P.2d 553 (Cal. 1974), *reargued*, 551 P.2d 334 (Cal. 1976).
3. *Corn v. French*, 289 P.2d 173 (Nev. 1955).
4. *Katsetos v. Nolan*, 368 A.3d 172 (Conn. 1976).

Learning Portfolio

At the end of each chapter, this review section includes: Study Points, Issues for Discussion, and Enrichment Activities.

All sections are thoroughly updated to reflect current training requirements, responsibilities, and salaries, as established in the *Occupational Outlook Handbook 2016-2017 Edition.*

New Careers

Includes nine new careers!

- Podiatrist (Chapter 9)
- Orthotics and Prosthetics (Chapter 17)
- Exercise Physiologist (Chapter 19)
- Substance Abuse and Behavioral Disorders Counselor (Chapter 20)
- Genetic Counselor (Chapter 22)
- Community Health Worker (Chapter 23)
- Board-Certified Behavior Analyst (Chapter 23)
- Phlebotomist (Chapter 29)
- Massage Therapist (Chapter 30)

THE LEARNING AND TEACHING PACKAGE

The Learning Package for the Student

Students can review the Learning Portfolios at the end of each chapter. For the first eight chapters of the text, the Learning Portfolio includes Study Points, a brief summary of the chapter content. All chapters also include Issues for Discussion and Enrichment Activities designed to be used by the student for self-study and exploration.

The Teaching Package for the Instructor

Teacher resources include the Learning Portfolios at the end of each chapter, which are designed to be used by both the student and instructor. In addition, the following items are part of the Instructor's Teaching Package:

- Test Bank for each chapter
- PowerPoint slides for each chapter
- Instructor's Manual with the following components:
  - Chapter Overview
  - Lesson Objectives
  - Resources
  - Suggested Lecture Outline
  - Discussion Questions
  - Suggested Learning Activities
  - Homework

Bloom's Taxonomy

The Learning Package for the student and the Teaching Package for the instructor are designed to incorporate Bloom's levels of learning from the lowest level of knowledge to the highest level of evaluation. The learning and teaching packages that accompany the text encourage going beyond the content of the text. The text is expected to be a starting point.

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PART ONE

The Healthcare System in the United States

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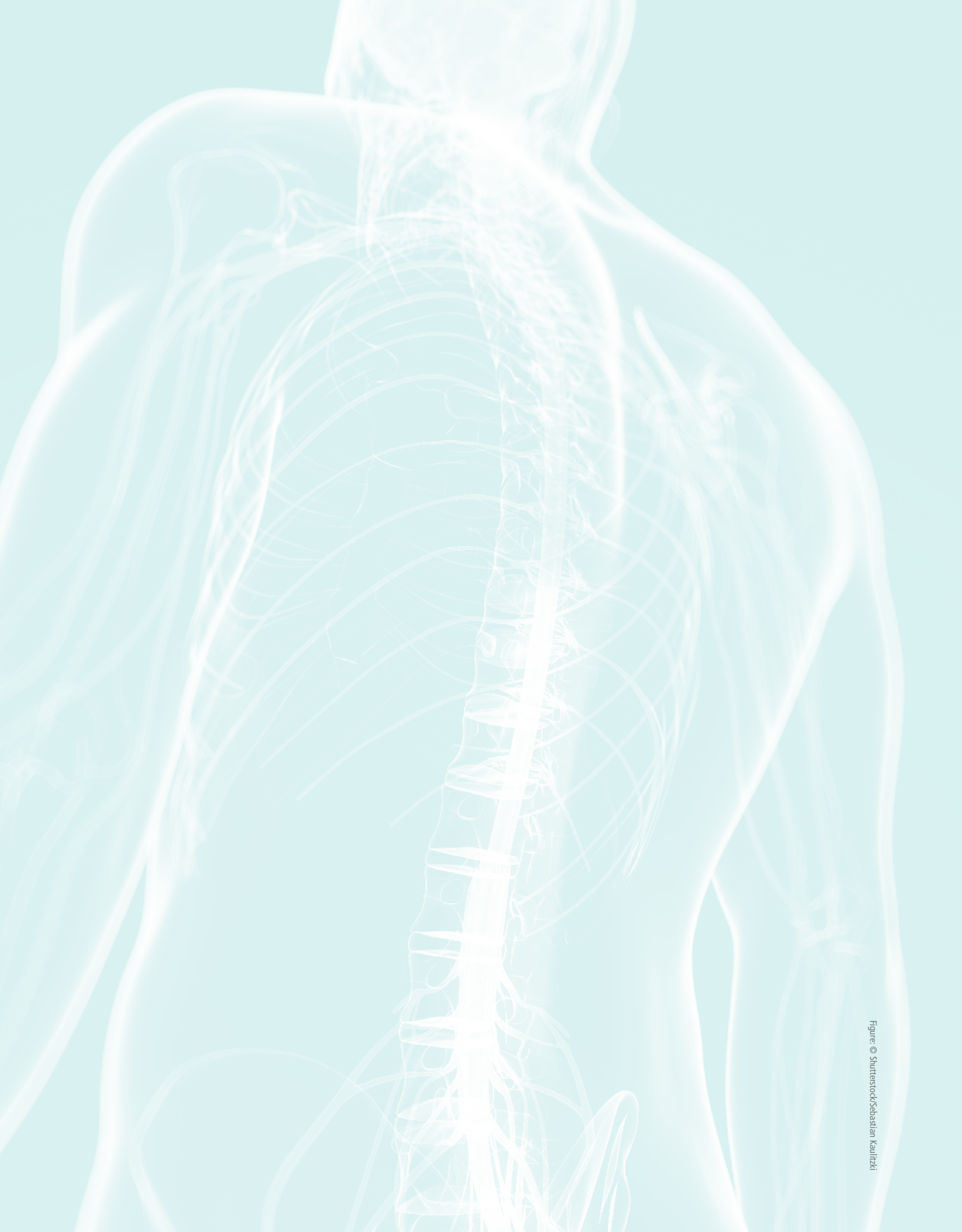

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CHAPTER 1

U.S. Health Care

Objectives

After studying this chapter, the student should be able to:

- Discuss the changes in health problems of the population in the United States over the past 150 years.
- Identify expected future changes in the health of the population that will influence healthcare needs and career opportunities in health care.
- Explain the role of the government in the expansion of health care.

Key Terms

Acute infectious diseases
Affordable Care Act (ACA)
Applied behavior analysis (ABA)
Autism spectrum disorder (ASD)
Avian influenza
Centers for Disease Control and Prevention (CDC)
Chronic illness
Children's Health Insurance Program (CHIP)
Clinical preventive services
Ebola virus
Electronic health records (EHRs)
Epidemics
Globalization
Health Exchange
Health information technology (health IT)
Health outcomes
Human Genome Project
Infant mortality
Infectious disease
Life expectancy
Lifestyle
Longevity
Medicaid
Medical technology
Methicillin-resistant *Staphylococcus aureus* (MRSA)
National Prevention Council
Sepsis
World Health Organization (WHO)

Introduction

This *Seventh Edition* differs from the first six editions for two reasons. First, three new chapters have been added: Chapter 6: Medical and Health Information Technology, Chapter 8: Career Development, and Chapter 22: Genetic Counseling. Second, discussion questions and enrichment activities have been added to each chapter. The impact of healthcare reform legislation on healthcare delivery systems and careers has been incorporated into this edition.

HISTORICAL EVENTS IMPACTING HEALTH CARE

Controlling healthcare costs and increasing access to health care were policy priorities for President Barack Obama with the passage of the **Affordable Care Act (ACA)** signed into law on March 23, 2010.[1] Some of the reasons for the rising costs of health care are the use of expensive **medical technology** and prescription drugs, reimbursement systems that reward the volume of medical services instead of outcomes, inadequate preventive services, the aging of the population, and the increased prevalence of chronic disease, as well as high administrative costs.[2] Healthcare costs have been a concern of the government because growth in healthcare costs exceeded growth of the United States economy beginning in the 1970s and 1980s at a high of 10% to 12% with a drop between 2010 and 2012, when healthcare spending was comparable to growth of the economy at 3%.[3] Another critical issue that needs to be addressed is the inefficiencies and disparities in the current system. Comparisons with other countries and across states show large variations in spending without commensurate differences in **health outcomes**.[4]

The most significant change in health care in the United States in the past five years is the number of individuals who have access to health care with the implementation of the ACA. At the end of 2014, 15.6 million people had health insurance through either a private health insurance carrier or a **Health Exchange**. Total enrollment through a Health Exchange totaled 6.7 million in 2014 and 11.7 million in 2015.[5] Also, between the summer of 2013 and January 2015, there was a 19% increase in the number enrolled in either **Medicaid** or the **Children's Health Insurance Program (CHIP)** for a total of 11 million additional low-income children and adults with access to health care.[6] Even with greater access to health insurance—an estimated 30 million people continue to be uninsured—the majority of the uninsured are low income with poor health who live in states that opted out of Medicaid expansion under the ACA.[7] Greater access to health care increased demand for providers (physicians, nurses and other healthcare workers), hospitals, outpatient clinics and home-care services. The healthcare environment has become more competitive, in large part because of the requirements for hospitals to improve both the quality of care and efficiency as a result of the ACA.

The United States will need to continue to improve the efficiency and quality of health care and reduce disparities in access to health care for all Americans. With that premise, we begin this chapter with a look back at healthcare issues and treatments developed in the past 150 years. Much of the material from the sixth edition of this text is still relevant. The succeeding chapters have been updated to reflect the anticipated changes and demographics of the 21st century, and the changing nature of health care and opportunities for health careers.

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 19th century, the most critical health problems were related to contaminated food and water and 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 as a result of 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. 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 chronic conditions.

Pneumonia, tuberculosis, diarrhea, and diphtheria accounted for one-third of all deaths in the 1900s. The most important factor in the decline in mortality in the 20th century was essential hygiene, supported by home and workplace improvements and attempts to improve the environment. Better hygiene accounted for approximately one-fifth of the reduction in mortality.[8]

Another reason for the falling death rate was the improvement of nutrition, which led to an increase in the resistance to diseases. Once sanitation improved, lack of food and the resulting malnutrition were largely responsible for 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

FIGURE 1.1 Universal child immunization beginning in the 1950s dramatically reduced death from infectious disease in the United States.
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methods, new tests to facilitate accurate diagnoses, and the 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 and the implementation of childhood universal vaccination in the 1950s for measles, mumps, rubella, and polio signaled the end of the dominance of acute infectious disease (**FIGURE 1.1**).[8]

By the late 1940s, **chronic illnesses** such as heart disease and cancer accounted for nearly half of the deaths in the United States. By the 21st century, the development of new drugs to control risk factors for heart disease, for example, drugs to control hypertension, cholesterol, and diabetes, reduced death from heart disease by 28% between 2003 and 2013. During this same time, deaths from cancer also decreased by 15% (**FIGURE 1.2**).[9]

The introduction of antiviral therapy in the 1990s reduced the death rate from the human immunodeficiency virus (HIV) by 80%.[10]

The effectiveness of new treatments, including drug therapy, increased **life expectancy** over a 30-year period between 1980 and 2013; life expectancy increased from 70 to 76.4 years in men and from 77.4 to 81.2 years in women (**FIGURE 1.3**).

Infant mortality rates fell to a historically low level of 5.96 per 1,000 births, a 13% decline between 2003 and 2013.[9]

Longevity and an increased number of elderly have increased the prevalence of chronic and degenerative diseases associated with aging, including hypertension, diabetes, chronic kidney disease, and osteoporosis, as well as Alzheimer's disease and other forms of dementia.[11] The downside to improved health care and longevity is that one-third of the population above 65 has multiple chronic conditions. Treatment for chronic conditions in the elderly accounts for two-thirds of total healthcare costs in the United States. In the future, physical and cognitive decline associated with aging will require personal assistance from family or paid caregivers and health services from a variety of health professionals. In addition, by 2050 the population will also be more ethnically and racially diverse: one-third will be Hispanic non-white, one-third African American, and one-third white.[11] These changes will influence the environment for new healthcare workers and the diversity of those needing care.

A LOOK FORWARD

Medicine must now confront the diseases and health problems that are greatly influenced by the local and international environment. **Globalization** and ease in international travel increase the risk for infectious diseases. In the United States, viral gastroenteritis is the most common viral infection and salmonellosis is the most common bacterial infection—both

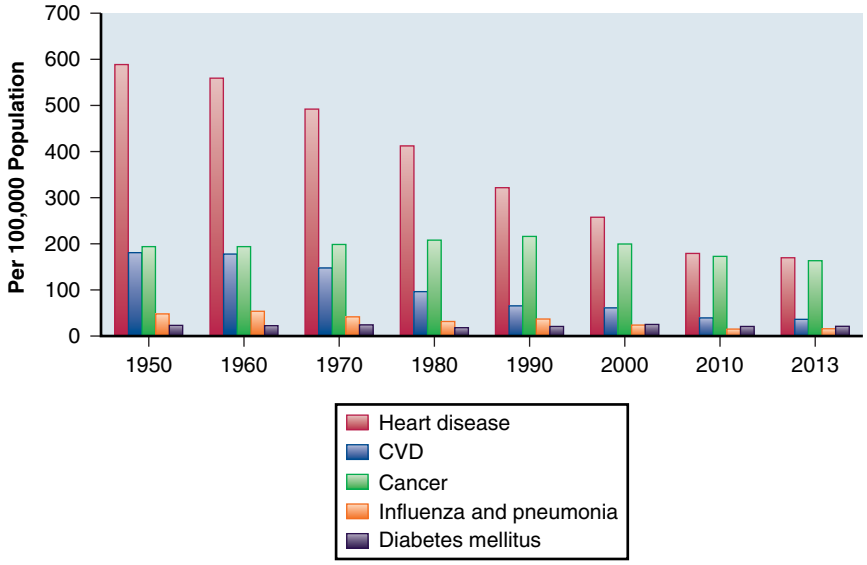

FIGURE 1.2 Death rate for selected causes.
Data from National Center for Health Statistics.

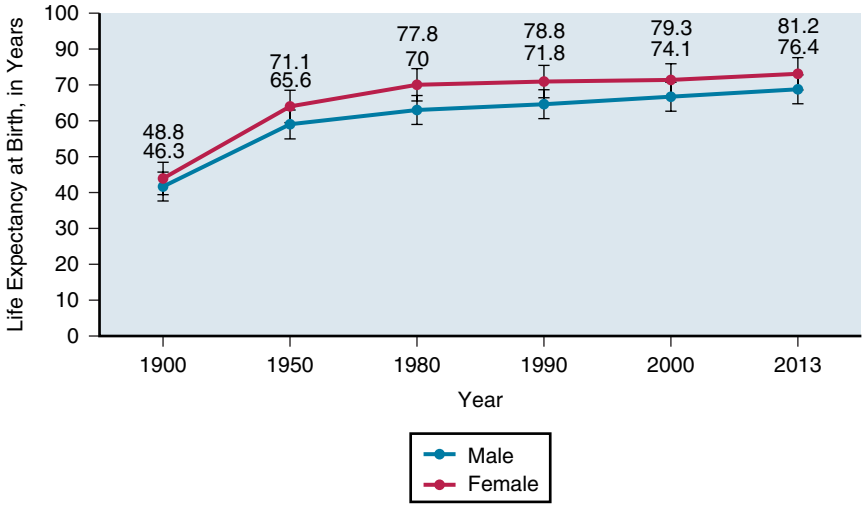

FIGURE 1.3 Life expectancy by year and sex.
Data from National Center for Health Statistics. Health United States, 2014: With Special Features on Aged 55–64.Hyattsville, MD. 2015.

organisms cause foodborne illness.[12] Newly recognized infectious agents have caused substantial public health concern and investment. These include influenza H3N2, **avian (bird) influenza**, and **Ebola**, and some particularly virulent or drug-resistant bacterial strains, such as **methicillin-resistant *Staphylococcus aureus* (MRSA)**. Influenza and pneumonia remain major causes of death, particularly among persons 65 years of age and older, and HIV/AIDS continues to spread.

Although most infectious diseases are now prevented with vaccines and improved methods of infection control, new organisms continue to appear from mutations and transmission from wild animals or insects to domesticated animals and sometimes to humans. For example, in 2015 cases of avian flu were identified in Europe and China; in the United States, entire commercial poultry flocks required culling or removal of infected turkeys and chickens—and sometimes an entire flock was destroyed to prevent further spread of the disease, at great financial cost to the poultry business.[13]

The 2014 Ebola epidemic in West Africa, the largest in history, spread to the United States by healthcare workers employed in West Africa. The **Centers for Disease Control and Prevention (CDC),** the U.S. government agency that monitors infectious diseases, developed infection-control measures for hospitals treating infected patients in the United States. WHO and the CDC also deployed teams of experts to West Africa to implement infection-control measures to prevent further spread of the disease in Africa.[14]

MSRA increases the risk for surgical infections, pneumonia, and **sepsis** in hospitalized patients and requires stringent infection control measures to prevent spread of the bacteria causing the infection from patient to patient and among healthcare workers (**FIGURE 1.4**).[15]

Epidemics of infectious disease require a team of experts to track and contain diseases to prevent epidemics in both humans and animals. Physicians, nurses, veterinarians, medical laboratory technologists, epidemiologists, and public health officials at the local, state, and federal level are examples of healthcare workers involved in preventing the spread of infectious disease.

FIGURE 1.4 Methicillin-resistant *Staphylococcus aureus* (MRSA) is a common cause of skin infection.
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Most diseases of today are associated with personal **lifestyle**. Individuals can take responsibility for most lifestyle factors such as physical activity, eating habits, smoking, drinking alcoholic beverages, using illicit drugs, personal hygiene, and so forth. However, healthy communities are necessary to support individuals in achieving a healthy lifestyle. Disparities in health are related to lack of access to healthy food, safe housing, space for regular physical activity, education, employment, and health care. The **National Prevention Council** established seven priorities for preventive services to improve the health and quality of life for all Americans of all ages and to address health disparities (**TABLE 1.1**).[16]

Two lifestyle factors associated with a high risk for heart disease and cancer that can be changed are smoking

TABLE 1.1 National Prevention Strategy Priorities for Reducing Death and Major Illness

Tobacco-free living
Preventing drug abuse and excessive alcohol use
Healthy eating
Active living
Preventing injury and violence
Reproductive and sexual health
Mental and emotional well-being

Data from National Prevention Council. *National Prevention Strategy*. June 2011. Internet: http://www.surgeongeneral.gov/priorities/prevention/index.html

and obesity.[17] The good news is that the rate of smoking has dropped by more than half since 1970, when 45% of adults over 18 years of age smoked compared to only 18% in 2013. However, obesity rates continue to rise—only 30% of adults 20 years of age and older were at a healthy weight between 2009 and 2012.[9]

For the future, the predominance of chronic illness as the major threat to health raises many issues. The public concept of health is that intervention by the doctor and early discovery of disease will prevent or cure disease, when in fact health is determined mainly by lifestyle. Optimal treatment for preventing chronic illness requires health care that is long-term and continuous, yet health care in the United States is often delayed until a chronic disease has been diagnosed. Although behavioral and environmental influences are the greatest contributors to poor health, surgery and drugs are regarded as the core of health care. The current method of financing health services emphasizes payment for specialized services—for example, surgery or cardiac rehabilitation—instead of preventive care, which may include referral to a dietitian for nutrition counseling to lower weight and blood cholesterol levels. Funding for health care has traditionally focused on treatment of chronic disease, such as hemodialysis treatment for chronic kidney disease—often the result of untreated or poorly controlled hypertension or diabetes. What is needed in health care is a redistribution of resources for the prevention of disease, care of the acutely ill who require immediate treatment, and ongoing care for those with chronic diseases.

Preventive healthcare services improve health by protecting against disease, lessening the impact of disease, or detecting disease at an early stage when it is easier to treat. As a result of requirements to include preventive services by insurance plans purchased through Health Exchanges under the ACA and coverage by Medicare, **clinical preventive services** are being utilized by more Americans. For example, immunizations and cancer screening—e.g., mammography and colonoscopy—are the most common preventive services. However, utilization remains suboptimal for some services. In 2013, only 70% of children 19 to 35 months of age received a combined vaccination series protecting them against nine infectious diseases. Only 41% of adults 18 years and older received the influenza vaccine, and only 60% of adults over 65 years of age received a vaccine against pneumonia.[9]

IMPACT OF TECHNOLOGY ON HEALTHCARE SERVICES

Technology has made many new procedures and methods of diagnosis and treatment possible. Advances in medical technology have improved the survival rates of trauma victims and the severely ill. Clinical developments, such as infection control, less-invasive surgical techniques, and advances in reproductive technology, improve the quality of life. Drug therapy for managing chronic conditions—cancer, heart disease, and diabetes—has extended life for many Americans. Prescription drugs for treating mental illness have allowed many to live in the community instead of being hospitalized.[10] Between 2007 and 2010, nearly half of all Americans took one or more prescription drugs. Factors that have contributed to greater use of prescription drugs are the growth of drug coverage by private and government health insurance—Medicare Part D (drug plans) was introduced in 2006—and the ACA of 2010 made drugs more affordable.[10]

The continuing surge of technological advances is not without problems. Medical technology can also prolong life for the critically ill, unresponsive patient who has little or no chance of recovery. Services such as mechanical ventilation, kidney dialysis, parenteral (tube) feeding, and other means can keep even comatose patients alive. For the healthcare system, dying can be extremely expensive.

The high cost of technology affects the financial structure of the entire healthcare system. These increased costs are visible in the form of higher health insurance costs, higher costs for hospital stays, government payments to the system, and total medical bills. This advanced technology has not only increased medical costs, but also created a social and ethical problem. Because of limits in funding, advanced treatment is not available 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 skills. Less time is spent learning personal, nontechnical aspects of care. This value system is reinforced by professionals, peers, and administrators, and 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 healthcare system by virtue of its expanding monetary support of technology and services, and because it sets the rules for the provision of health care.

As health services enter the 21st century, it becomes apparent that the social philosophy of the 20th century is

obsolete and is moving toward a philosophy that holds society, through the government, responsible for organizing and maintaining adequate health care for all people. Health care was once considered an individual matter, but it is now considered a right to which everyone should have access.

TRENDS THAT WILL IMPACT HEALTH SERVICES AND HEALTH CAREERS

Changes in disease patterns and methods of diagnosis and treatment impact the demand for health services and healthcare workers. The **Human Genome Project** has identified gene mutations that transmit risk for disease and response to drugs used to treat disease. The lower cost of genetic testing and coverage by health insurance have made it possible for this technology to be available for more people. This new information allows a physician to ask patients for a family disease history and order DNA testing to target preventive measures specific to the disease. Genetic counselors play an important role in counseling patients about DNA testing to identify risk for disease as well as treatment interventions.[18]

Public health research shows that more and more children are being diagnosed with **Autism spectrum disorders (ASD)** with 1 in 68 children in the U.S. being given this diagnosis. Children with ASD are often treated by a team of health professionals, including occupational therapists, speech therapists, and **applied behavior analysis (ABA)** therapists (FIGURE 1.5).[19]

Many diseases of the brain cause disabilities that impact productivity and quality of life and contribute to high healthcare costs. New technology makes it possible to identify genes for these brain diseases—Alzheimer's, Parkinson's disease, epilepsy, ASD, traumatic brain injury, and psychiatric disorders such as schizophrenia and depression—as well as capture images of the brain to develop treatment for such diseases.[20] Awareness of the need for pain control and freedom to make choices about treatment for those with life-limiting illnesses is beginning to shift the focus of both patients and physicians from curative therapy to quality of life and greater use of palliative and hospice services.[21]

Health information technology (health IT) is changing the way healthcare workers practice their profession, and even more changes are expected in the future. First steps were using **Electronic health records (EHRs)** in hospitals that linked data from physicians, pharmacy, clinical laboratories, and imaging as well as documentation by all health professions. EHRs make it possible for multiple team members to schedule a patient-team conference regardless of physical location. Remote monitoring of patient clinical data—for example, blood pressure and blood glucose—allows healthcare workers to provide care after the patient is discharged from the hospital. Sharing of EHRs among different providers for the same patient—hospital, emergency room and outpatient clinic—has the potential for improving patient safety by avoiding drug interactions and reducing costs by avoiding duplicate laboratory tests.[22] The federal government uses data to monitor outcomes such as hospital readmission rates and surgical complications, as well as healthcare costs.

FIGURE 1.5 Autism spectrum disorders (ASD) affects 1 in 68 children in the United States.
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SUMMARY

To improve the health of all Americans, it is critical to continue collecting data on all components of health; documenting trends in risk factors, health status, and access to and utilization of healthcare services; and disseminating reliable and accurate information about the health of our population. Equally important is gaining an understanding of the healthcare needs and utilization patterns of population subgroups, especially with changes in access to health care with healthcare reform. Such insights will enable policy makers to set program priorities and allocate target resources most effectively. Healthcare and population trends and healthcare reform will affect all health professionals in every career and will change the practice of medicine as we know it.

Because there is no single "U.S. healthcare 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.

LEARNING PORTFOLIO

Study Points

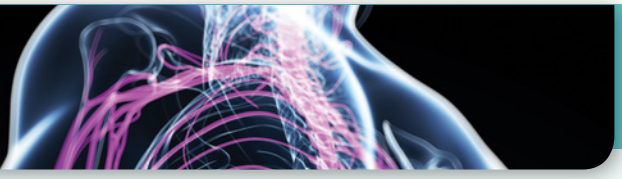
1. As a result of the 2010 Affordable Care Act (ACA), more Americans had access to health insurance through Health Exchanges, Medicaid, or the Children's Health Insurance Program (CHIP). As a result of new Health Exchanges, 6.7 million Americans obtained health insurance in 2014 and 11.7 million were enrolled in 2015. An additional 11 million low-income adults and children received health care through Medicaid or CHIP in 2015.
2. Health problems during the 1800s were related to contaminated food and water and inadequate sewage disposal resulting in epidemics and deaths from cholera and yellow fever.
3. Both longevity and infant mortality statistics improved with improvement in sanitation and universal immunization; by 1950, the principal causes of death changed from infectious diseases to the chronic diseases of heart disease and cancer.
4. By the 21st century, the decrease in death rates among the elderly was significant. These declines were related to improved drug treatment for heart disease and cancer and lower smoking rates.
5. The consequence of improved longevity is a greater number of elderly with multiple chronic and degenerative diseases; treatment for these conditions account for two-thirds of total healthcare costs in the United States.
6. Clinical preventive services (cancer screening and immunizations) are more accessible because of provisions of the Affordable Care Act, but not all Americans take advantage of these services.
7. New infectious diseases of domesticated animals and humans continue to emerge and require monitoring and infection-control measures to prevent epidemics.
8. Over 50% of the causes of death are related to personal lifestyle choices: diet, physical activity, tobacco and alcohol use, illicit use of drugs, and motor vehicle traffic fatalities.
9. Greater use of prescription drugs are the result of drug coverage by private and government health insurance—Medicaid, CHIP, Medicare, and the ACA.
10. The Human Genome Project will increase understanding of diseases of the brain needed to develop improved methods of diagnosis and treatment.
11. Health information technology (health IT) improves communication and efficiency in providing health care and will increasingly be used by the government to monitor the quality and cost of healthcare delivery.
12. Factors that will influence current and future healthcare occupations are changes in disease patterns and treatment and access to health care.

Issues for Discussion

1. Discuss changes in access to health care in the United States as a result of the Affordable Care Act of 2010.
2. Discuss how the causes of death have changed since 1900 in the United States. Discuss three major factors that have contributed to this change.
3. Discuss the role of government in providing access to health care through legislation and financial support of health care and technology.
4. Discuss the pros and cons of requiring all children to receive immunizations as a prerequisite to enrolling in school.
5. Discuss the role of Health information technology (health IT) in monitoring the quality and cost of health care in the United States. What are the advantages and disadvantages of using HIT?

Enrichment Activities

1. Methicillin-resistant *Staphylococcus aureus* (MRSA) is a cause of skin infection in the community, for example in high schools and day care centers. Review information from the CDC (*MRSA in the Community*: http://www.cdc.gov/mrsa/community/index.html) to learn how MRSA can be transmitted in the community setting.
2. Use obesity prevalence maps from the CDC (*Obesity and Overweight*: http://www.cdc.gov/obesity/data/prevalence-maps.html) to learn more about obesity in the United States, including the state in which you live. Which states have the highest rates of obesity, and which states have the lowest rates of obesity?
3. Explore *CDC Vital Signs* to learn more about differences in cigarette smoking across states and different groups within the United States (*Tobacco Use & Second Hand Smoke*. CDC Vital Signs. September 2010: http://www.cdc.gov/vitalsigns/TobaccoUse/Smoking/index.html). Learn more about the health risks of smoking and secondhand smoke.
4. Learn more about the role of genomics from the CDC's Healthy People 2020 website (http://www.healthypeople.gov/2020/topics-objectives/topic/genomics). Which diseases have a strong relationship to genomics, and how can this information be used by consumers and physicians to prevent disease?
5. Review the article *Global Health in the Clinical Laboratory* (*Critical Values*. 8:24-27, April 2015: http://www.ascp.org/Newsroom/Critical-Values.html) to learn how Emory University in Atlanta, Georgia prepared to accept and treat patients traveling from West Africa who were infected with the Ebola virus. What special isolation procedures were used?



LEARNING PORTFOLIO

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CHAPTER 2

Categories of Health Services

Objectives

After studying this chapter, the student should be able to:

- List direct health services provided by the federal government.
- Compare financing and governing of private, public, and volunteer healthcare facilities.
- Identify the four broad types of health services in the United States.
- Compare the population served by federally funded primary care health centers and free clinics.
- Name health agencies within the U.S. Department of Health and Human Services (HHS).
- Summarize the six major points of the Patient Care Partnership.
- Describe public health and mental health services in the United States.

Key Terms

Affordable Care Act (ACA)
Almshouse
Ambulatory care
Behavioral Risk Factor Surveillance System (BRFSS)
Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA)
Commissioned Corps
Community hospital
Diagnosis and treatment
Disease prevention
Essential hospitals and health systems
Federally funded primary care health centers
Healthcare facilities
Health promotion
Health Resources and Services Administration (HRSA)
Hospital system
Indian Health Service (IHS)
Informed consent
Mental health services

Mental Health Parity and Addiction Equity Act of 2008
National Association of Free & Charitable Clinics (NAFC)
National Center for Health Statistics
National Institutes of Health
Network
Patient Care Partnership
Private hospital
Proprietary hospital
Public hospital
Refugee
Rehabilitation
Social Security Act of 1935
Social Security Act of 1965
TRICARE
U.S. Department of Defense (DoD)
U.S. Department of Health and Human Services (HHS)
U.S. Public Health Service (PHS)
Vital statistics
Voluntary hospital

OVERVIEW OF THE U.S. HEALTHCARE SYSTEM

The healthcare industry is a complex system of diagnostic, therapeutic, and preventive services. Hospitals, clinics, government and volunteer agencies, pharmaceutical and medical equipment manufacturers, and private insurance companies provide these services. In terms of jobs in the healthcare industry, hospitals employ the largest percentage (39%), followed by offices of health practitioners (26%) and nursing and other residential facilities (20%). Home health services and outpatient, laboratory, and other ambulatory care settings make up the remaining healthcare jobs, at 8% each.[1]

The focus of this chapter is hospitals and outpatient or ambulatory care provided by both private and government institutions, as well as the federal agencies responsible for ensuring the health and safety of all Americans under the **U.S. Department of Health and Human Services (HHS)** through research and financial support. Chapter 4 includes long-term care—nursing home care and other supportive living facilities.

The federal government provides very few direct health services, preferring to support new, improved services by providing money to fund expanded services, for example through the **Affordable Care Act (ACA)**. The exceptions are the health services of **TRICARE**, through the **U.S. Department of Defense (DoD)**, the **Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA)**, and the **Indian Health Service (IHS)**. 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 through the **National Institutes of Health (NIH)** and individual health care for the elderly through Medicare as well as healthcare for the low-income uninsured through Medicaid. The federal government also funds loans and scholarships for students in the health professions through the **Health Resources and Services Administration (HRSA)**. The most important federal agency concerned with health affairs is the HHS, with 11 operating divisions, including eight agencies in the U.S. Public Health Service and three human services agencies.[2] Congress plays a key role in this federal activity by making laws, allocating funds, and doing investigative work through committees.

The healthcare system offers four broad types of services: health promotion, disease prevention, diagnosis and treatment, and rehabilitation.

CATEGORIES OF HEALTHCARE SERVICES

Health promotion services 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 prenatal nutrition classes and local health departments that offer selected recipients prenatal nutrition classes plus a food package that meets their nutritional 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.

Disease 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. Examples of public health programs are a smoking cessation class offered through the hospital or the local department of public health or a lead abatement program for older homes offered to homeowners by the city health department. An example on the individual level is women participating in screening for breast and cervical cancer. It is evident that preventive measures such as these can reduce the overall costs of health care.

Diagnosis and treatment of illness have been the most used of the healthcare services, most often provided in the hospital or ambulatory care setting. Diagnosis of illness involves physician visits and, if necessary, laboratory tests, x-rays, and other technology to make a diagnosis; examples of treatment are surgery, physical and speech therapy, and medications. Recent advances in technology and early diagnostic techniques have greatly improved the diagnosis and treatment capacity of the healthcare delivery system—but the advances have also increased the complexity and price of health care (**FIGURE 2.1**).

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,

FIGURE 2.1 Diagnosis and treatment is the most-used healthcare service.

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rehabilitation centers, hospitals, outpatient clinics, and long-term care facilities. Rehabilitation is a long process, and both the client and family require extra assistance in adjusting to a chronic disability. Common conditions requiring rehabilitation are physical injuries such as strokes and head injuries, hip and knee replacement surgery, and mental conditions such as alcohol or drug addiction.

HEALTHCARE FACILITIES

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

Expansion of the healthcare system and professional specialization has resulted in an increase in the range and types of healthcare settings. Medical care settings include offices of health practitioners, nursing and residential facilities, home health services, and outpatient clinics, laboratories, and ambulatory services as well as the primary inpatient setting—hospitals. Public health settings are usually community-based and may be voluntary organizations, such as the American Cancer Society, or government-supported entities, such as the city, county, or state public health department.

Clients requiring diagnosis and treatment can find health care in physicians' offices, ambulatory care centers, and outpatient clinics. In addition, there are freestanding immediate-care clinics staffed by physicians or located inside a pharmacy and staffed by nurse practitioners or physicians' assistants who provide immunizations and treat minor, acute illnesses such as colds, cuts, or sprains. Although physicians in office practice focus mainly on the diagnosis and treatment of specific diseases, many clinics and ambulatory centers offer health education and rehabilitation as well. For example, outpatient cardiac rehabilitation centers provide classes on nutrition and stress management and the use of exercise equipment to increase strength and endurance while monitoring heart function. Other health professionals who provide rehabilitation services are physical therapists for physical rehabilitation and psychologists, social workers, and behavioral counselors, who provide therapy for chemical addiction and mental illness.

Community-based agencies provide health care within defined neighborhoods. Such diverse facilities include federally supported health centers, adult daycare 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.

Federally funded primary care health centers serve high-need communities designated as medically underserved areas or populations—the largest comprehensive safety net of primary and preventive care in the country. The health centers are supported by the HRSA within the HHS and are public and private nonprofit healthcare organizations governed by a board, most of whose members are in the community being served by the health center. The centers serve medically underserved populations/areas or special, medically underserved populations, such as migrant and seasonal farmworkers, the homeless, or residents of public housing. The health centers provide a medical home for low-income individuals, racial and ethnic minorities, and other underserved populations in both rural and urban communities. Health centers manage patients with multiple healthcare needs and use key quality improvement practices, including health information technology—nearly 90% of the centers use electronic health records.[3] The health centers provide services to patients regardless of their ability to pay; however, many patients are enrolled in Medicaid, Medicare, or the Children's Health Insurance Program (CHIP), and the health centers receive reimbursement for services from these federal government programs. Other patients may have insurance through the ACA Healthcare Marketplace or other insurance outlets. Comprehensive medical, dental, pharmacy, and behavioral health services are available at the health centers. A multidisciplinary team of physicians, physician assistants, nurses and nurse practitioners, midwives, social workers, health educators, and behavioral health and other providers staff the health centers.

The first health centers were established in 1962 for migrant and seasonal farm workers, and by 1964, two neighborhood health centers were opened in the Boston area. As of July 2015, there were more than 1,300 health centers that operated in 9,000 service sites that provided care to nearly 23 million patients in all states within the United States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and the Pacific Basin. As a result of the ACA (which provided funds to expand the health centers and increased access to health insurance coverage), the number of centers increased by 300 and the number of patients served increased by 23 million. In 2014, one in every 14 Americans received health care through one of the health centers; 50% of those receiving

FIGURE 2.2 Free clinics provide dental services to the uninsured.
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services were members of an ethnic or minority group and 28% had no health insurance. The quality of care is comparable to private primary care centers.[4]

Privately funded free clinics are nonprofit, community-based or faith-based organizations that provide health care at little or no charge to low-income individuals who are uninsured or underinsured. Referrals are made for follow-up care and health specialists as needed. Clinics may be housed in temporary physical facilities similar to those used for humanitarian relief in response to disasters such as a hurricane or tornado. Other clinics may be housed in existing physical spaces such as churches. Clinics are staffed by a variety of volunteer health professionals—doctors, dentists, nurses, optometrists, therapists, pharmacists, and others (FIGURE 2.2). The **National Association of Free & Charitable Clinics (NAFC)** was established in 2001 to support 1,200 free clinics in nearly all states within the United States. The NAFC supports free clinics through education and advocacy in Congress and with federal and state agencies. Partnerships with pharmaceutical companies and other organizations are used to obtain low-cost or free medications and medical supplies. In contrast to the federally funded health centers, the free clinics receive little or no state or federal funds but depend on grants and donations. Since the implementation of the ACA, 80% of the free clinics have reported no change in the demand for services. The most common reasons cited by patients for using free clinics are the high cost of insurance premiums, the high cost of medications, and a lack of providers. Groups that are served by the clinic are immigrants, veterans, the homeless, and members of the lesbian, bisexual, gay, and transgender (LBGT) community.[5,6]

There is a popular misconception that free clinics are no longer necessary after the implementation of the ACA. However, an estimated 30 million people living in the United States are uninsured, including 11,000 immigrants who are undocumented.[7] Immigrants, documented or otherwise, are three times more likely to be uninsured because most work in low-paying jobs that do not include a health insurance benefit, and undocumented immigrants are not eligible to obtain health insurance through the ACA marketplace. In addition, documented immigrants must have lived in the United States for at least five years to be eligible for Medicaid. However, immigrants granted **refugee** status are eligible for Medicaid.

Individuals who are unemployed or working in low-paying jobs and living in the 19 states that have not chosen to expand Medicaid often are unable to pay for the premiums for health insurance policies through the health exchanges (state or federal marketplace). They fall into a coverage gap because they earn too much to be eligible for Medicaid and don't earn enough to be able to pay for health premiums, even when the premiums are subsidized. However, they would be able to receive care in federally supported health centers.[8] Undocumented immigrants often rely on free clinics for health care since they are not eligible for government programs, either Medicaid or services through the federally subsidized health clinics.

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

HOSPITALS: DEVELOPMENT AND SERVICES

The hospital is the key resource and center of the U.S. healthcare system. Hospitals not only deliver primary patient care, but some 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. Hospitals are the second-largest business in the United States. They employ approximately 40% of healthcare personnel, with a collective payroll that accounts for at least one-third of the nation's health expenditures. Approximately 60% of federal health spending goes to hospitals as reimbursement for patients who are enrolled in Medicare or Medicaid.

American hospitals started around the time of the Civil War in response to urbanization and economic expansion during the Second Industrial Revolution as well as the arrival of large numbers of immigrants. When the country was first settled, most Americans lived in rural areas and received health care in the home. Hospitals emerged from **almshouses**, institutions that cared for the poor who were chronically ill or disabled. The first two hospitals in the United States were originally almshouses—a six-bed almshouse founded in 1736 in New York City later became Bellevue Hospital, and an almshouse founded in the same year in New Orleans later became Charity Hospital. Before the 1920s, the doctors donated their services and the nurses and other staff received low pay; however, as healthcare staff

became more professional, funds were required to operate the hospitals. From these first hospitals developed public hospitals established by cities, counties, or states that were committed to serving all people but especially the poor. The passage of the **Social Security Act of 1965** created the Medicare and Medicaid programs that funded health care for those over 65 years of age through Medicare and for the indigent through Medicaid. These programs provided federal funds to alleviate poverty; Medicare and Medicaid provided a source of funds to hospitals.[10]

The major forces affecting the development of hospitals include the following: (1) advances in medical science, most notably the 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, although simple, procedures were a great boon to the growth of hospitals, 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 20th century.[11]

The growth of health insurance (which is discussed in Chapter 3) and of the role of government 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.

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 five days being the average length of stay, and fewer long-term, such as psychiatric or chronic disease hospitals, where the average stay is several weeks to months); and ownership or source of financial support—e.g., government (or public), proprietary (private for-profit), or voluntary and religious (private nonprofit) ownership.[11] The majority of hospitals, nearly 5,000, in the United States are community hospitals, with nearly 3,000 of community hospitals being nonprofit (**TABLE 2.1**).

Hospitals are either private or public. A **private hospital** is owned and operated by groups such as churches, businesses, corporations, and physicians. This type of 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, for example by the city, county, or state. Such facilities are termed *nonprofit facilities*, and they admit many patients who cannot afford to pay for medical care. Patients 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 organizations. **Community hospitals** are independent, nonprofit corporations consisting of local citizens interested in providing hospital care for their community.[11]

TABLE 2.1 Number of Hospitals in the United States by Type of Hospital

Type of hospital	Number
Community	4,974
Nonprofit	2,904
For-profit	1,060
State and local	1,010
Federal government	213
Non-federal psychiatric	406
Non-federal long-term care	81

Data from: American Hospital Association

Proprietary hospitals or for-profit hospitals are operated for the financial benefit of the persons, partnerships, or corporations that own them. The current 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, and at other times with dubious benefit. However, the proliferation of multisystem hospitals (corporation owned, leased, or managed) will probably persist.[11]

Community hospitals are defined as short-term general and specialty hospitals designed to treat specific health problems, which may include obstetrics and gynecology; ear, nose, and throat; rehabilitation; and orthopedic conditions. These may include academic medical centers and teaching hospitals. A **hospital system** is defined as either more than one hospital managed by one organization or a single hospital that includes other healthcare organizations—for example, a single hospital that has ownership in a pre-acute outpatient clinic and/or in a post-acute rehabilitation center. A **network** is a group of hospitals, physicians, and other providers such as physical therapists or mental health workers, insurers, and other community agencies that work together to coordinate and deliver a broad spectrum of services within a town or geographic region.[12]

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 governments usually operate long-term hospitals treating

chronic illnesses, such as mental institutions. Local governments have 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 healthcare 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.[11] Another term used to describe public hospitals is **essential hospitals and health systems** that provide significant levels of care to vulnerable populations with limited or no access to health care because of financial circumstances, insurance status, or health condition.[13]

Every state operates hospitals that provide long-term care (if necessary) for the treatment of the mentally ill or developmentally disabled persons; for example, Lincoln Regional Center is a hospital that provides care for Nebraskans who are mentally ill. 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 and city hospitals provide services for the poor and for private patients. Municipal and county governments usually control city hospitals. An example of a locally governed public hospital is Cook County Hospital in Chicago, IL. Cook County Hospital provided uncompensated care for residents without health insurance for years at a cost to taxpayers. As a result of the Affordable Care Act and higher numbers of patients being insured, the hospital reported that revenue exceeded expenses by $14.1 million for the first time in history for the fiscal year ending November 30, 2014.[14]

The federal government operates hospitals and clinics for three agencies—the VA, the DoD and the IHS. CHAMPVA is a comprehensive healthcare program in which the VA shares the cost of covered healthcare services with eligible veterans of the armed services. VA services are organized into 23 regional centers that include hospitals and clinics plus outreach clinics. TRICARE is a managed healthcare program for active-duty and retired members of the armed services, their families, and survivors. Military retirees and spouses of veterans killed in action are also eligible for health services through TRICARE. Walter Reed National Military Medical Center in Bethesda, MD is one of the largest military hospitals in the United States and provides care for military personnel that are injured or need medical care (**FIGURE 2.3**).[15]

FIGURE 2.3 The federal government operates hospitals for the military and VA.

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The IHS provides health services to 2.2 million American Indians (AI) and Alaska Natives (AN) who are members of 566 federally recognized tribes. IHS is administered through a system of 12 area offices and 170 IHS and tribally managed service units that include both hospitals and clinics. In addition, there are 33 urban health service programs to meet the needs of AI/AN who live off the reservation.[16]

AMBULATORY HEALTHCARE 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 healthcare 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 the office of either a single practitioner or a group practice or in a non-institutional clinic. The type of service is primary or secondary care, and the principal health practitioners are physicians, dentists, nurses, medical lab technicians, physical therapists, and medical and nursing assistants. 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 hotlines and poison control centers.

Primary and secondary care is given at neighborhood health centers and migrant health centers as previously discussed in this chapter. Psychologists and social workers staff community mental health centers. Nurses staff home health and school health services and give both primary and preventive care. Public health services include targeted programs such as family planning, immunizations, screening, maternal and child nutrition, 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 health inspectors who do inspections of factories, hospitals, and food establishments to ensure the safety of workers and the public. 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 service's business and operations functions. 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 the scope and quality of care, as well as personnel practices.[11]

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 endocrinology. Teaching hospitals operate many specialty ambulatory clinics that expose medical students and residents to more extensive experiences. Ambulatory surgery centers and emergency medical services have both 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.[11]

MENTAL HEALTH SERVICES

Mental health facilities in the United States were developed in the 19th century (as was the American Psychiatric Association), but they were little more than warehouses for large numbers of poor, homeless, alcoholics, drug addicts, and social misfits. They were state hospitals in which the primary purpose, instead of treating the patient, was to protect the public. The 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 the real treatment of mental illnesses. Psychotropic drugs enabled thousands of people to return to their communities and to be treated on an outpatient basis.[17]

As local health departments began to report successful treatment outside of institutions, federal legislation was enacted for the construction of community mental health centers. The community mental health center network was conceived in the late 1960s to discharge residents from institutions back into the community with the development of community mental health centers for providing outpatient **mental health services**. Grants were provided to finance staffing and conversion, especially in economically depressed areas. The centers provided inpatient, outpatient, and day care, as well as emergency services; were required to provide specialized services for the mental health of children and the elderly; and offered special prevention, treatment, and rehabilitation programs for alcoholics, drug abusers, and drug addicts. The decline of federal and state monies for local services affected the ability of the centers to provide comprehensive services and even the survival of many where they are needed most—impoverished communities.[17.]

Unfortunately, however, moving mental health care into the community failed to care for deinstitutionalized persons, and there are fewer hospitals specializing in acute psychiatric illness. Between 1995 and 2010, the number of psychiatric hospitals decreased 30% and the total number of psychiatric inpatient units decreased 20%.[18] As a result, visits to community hospital emergency rooms for acute mental health problems have increased. Also, many with severe mental illness have returned to institutions for the chronically mentally ill or live in group homes, halfway houses, or nursing homes. Mental health personnel involved in the delivery of mental health services include psychiatrists, who are physicians who make

a mental diagnosis, prescribe medications, and may provide psychotherapy. Other mental health professionals include psychologists, clinical social workers, and psychiatric nurses who have advanced degrees and who provide case management and/or psychotherapy. Primary care providers—physicians, nurse practitioners, and physician assistants—screen patients for mental health and substance use disorders and frequently prescribe psychotherapeutic medications. A number of allied health fields have developed in response to the growing needs of the community and the availability of funding. These include school counselors, special education teachers, and others such as art, music, and recreational therapists.

Many problems exist within the mental health system, including a society that clings to the concept of mental illness as a stigma. One in five Americans suffers from mental and substance use disorders every year, yet only one-half of those seek treatment. Mental and substance use disorders are leading causes of disability and death. Adequate and appropriate treatment for mental illness has been difficult, especially for long-term treatment. Historically, most health insurance policies limited the number of days in the hospital and the number of outpatient visits for treating mental and substance use disorders. It has been only recently that services are covered by health insurance policies as a result of the **Mental Health Parity and Addiction Equity Act of 2008**.[19] In addition, the Affordable Care Act of 2010 requires that all health insurance policies include mental and behavioral health services (see Chapter Five). These requirements are expected to increase access to mental health services for Americans. Unfortunately, those with serious mental illness often are unable to seek treatment, including follow-up care, because of the disabling effects of mental illness. The consequences of untreated mental illness too often are unemployment, homelessness, and incarceration. Treatment requires an integrated system of social and medical services and greater awareness of mental health and mental illness, prevention, and early intervention.

THE CONSUMER'S RIGHTS

In 1973, the American Hospital Association (AHA) developed a Patient's Bill of Rights. The bill, although not a legally binding document, stated the responsibilities of the hospital and staff toward the patient and his or her family. In 1997, President Bill Clinton appointed an Advisory Commission on consumer protection and quality in the healthcare industry that further refined the Patient's Bill of Rights. In 2003 the AHA developed the **Patient Care Partnership** to replace the Patient's Bill of Rights, which has six expectations for patients during hospitalization: (1) high-quality hospital care, (2) a clean and safe environment, (3) patient involvement in their own care, (4) protection of patient privacy, (5) help when leaving the hospital, and (6) help with billing claims. A brochure in simple language is available in several languages in addition to English is posted on the AHA webpage.[20]

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 be represented by someone (an advocate), and the document must be written in language the client can understand, delineate all the risks involved, state that participation is voluntary, and list the benefits of the procedure and alternatives to the procedure. The client's right to informed consent affects how the healthcare system delivers care. It usually results in increased costs from extra paperwork, but it is necessary for the consumer's protection (and may reduce the care provider's vulnerability to malpractice suits).

Healthcare 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 healthcare 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 VA hospitals and clinics and the **U.S. Public Health Service (PHS)**. If you choose to practice in Canada, the Canada Health Care System covers medical care for all residents of Canada.

PUBLIC HEALTH SERVICES

The mission of HHS is to enhance and protect the health and well-being of all Americans by providing for effective health and human services and fostering advances in medicine, public health, and social services. The Office of the Secretary, Operating Divisions, and Regional Offices administers HHS programs including the ACA. Many HHS-funded services are provided at the local level by state or county agencies, or through private sector grantees (TABLE 2.2).[2]

HHS is responsible for Medicare, Medicaid, public health, biomedical research, food and drug safety, disease control and prevention, Indian health, and mental health services. HHS works closely with state and local governments and provides leadership in public health emergency preparedness in the event of severe weather, infectious disease epidemics, or biological terrorism.[2]

The focus of public health is the community instead of the individual. The community may be limited to a city or may include an entire state, country, or the world. The recent outbreaks of infectious diseases such as Ebola and avian influenza and fears about bioterrorism demonstrate the importance of global disease surveillance, pooling of research efforts to help identify pathogens, and international cooperation to develop diagnostic tests, prevention measures, and treatments.

The emphasis in public health is on prevention in contrast to medical care, in which the emphasis is treatment of disease. Public health practitioners are represented by a variety of disciplines such as nursing, medicine, veterinary medicine, dentistry, health education, and nutrition.

Practitioners in public health, including epidemiologists and statisticians, study the nature of new threats and organize public measures to combat them. Because 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.

The threats to health change over time. As one set of diseases, epidemics, and conditions is brought under control or eliminated, new diseases appear. 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 20th century, degenerative, debilitative diseases such as chronic obstructive pulmonary disease (COPD), mental health and substance use disorders, cancer, arthritis, strokes, and coronary heart disease have replaced infectious diseases.

The public health system requires cooperation among 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 the purpose of which 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 matched federal money on a dollar-for-dollar basis.

Public health at the city and state level 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.

The establishment of public health and social services in the United States has evolved over time. **TABLE 2.3** is a timeline of the HHS beginning in 1798 with an act to provide health care for sick and disabled seamen.[9]

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.

TABLE 2.2 Operating Divisions and Functions within the U.S. Department of Health and Human Services (HHS)

Administration for Children and Families (ACF)	Promotes economic and social well-being of families, children, individuals, and communities through educational and supportive programs in partnership with states, tribes, and community organizations.
Administration for Community Living (ACL)	Ensures access to community support and resources to meet needs of older Americans and people with disabilities.
Agency for Healthcare Research and Quality (AHRQ)	Supports research designed to improve quality and patient safety, reduce healthcare costs and medical errors, and broaden access to essential services.
Agency for Toxic Substances and Disease Registry (ATSDR)	Prevents exposure to toxic substances and the adverse health effects and diminished quality of life associated with exposure from waste sites, unplanned releases, and other sources of environmental pollution.
Centers for Disease Control and Prevention (CDC)	Protects the public health of the nation by providing leadership and direction in the prevention and control of diseases and other preventable conditions, and responding to public health emergencies.
Centers for Medicare and Medicaid Services (CMS)	Combines oversight of the Medicare program, the federal portion of the Medicaid program and State Children's Health Insurance Program, the Health Insurance Marketplace, and related quality-assurance activities.
Food and Drug Administration (FDA)	Ensures that food is safe, pure, and wholesome; human and animal drugs, biological products, and medical devices are safe and effective; and electronic products that emit radiation are safe.
Health Resources and Services Administration (HRSA)	Improves access to healthcare services for people who are uninsured, isolated, or medically vulnerable.
Indian Health Service (IHS)	Provides American Indian and Alaska Natives with comprehensive health services by developing and managing programs to meet their health needs.
National Institutes of Health (NIH)	Supports biomedical and behavioral research in the U.S. and abroad, conducts research in its own laboratories and clinics, trains promising young researchers, and promotes collecting and sharing medical knowledge.
Substance Abuse and Mental Health Services Administration (SAMHSA)	Improves access and reduces barriers to high-quality, effective programs and services for individuals who suffer from or are at risk for addictive and mental disorders, as well as for their families and communities.

Data from: Department of Health and Human Services

These are: 1) collecting and reporting **vital statistics** such as birth, death, and incidence of diseases; 2) controlling communicable diseases such as influenza and measles; 3) maintaining a sanitary and safe supply of food and water; 4) ensuring maternal and child health by providing prenatal care; 5) improving health education on common diseases through publications and state and local outreach; and 6) providing laboratory services to track communicable diseases such as HIV/AIDS, influenza, and outbreaks of foodborne illnesses. States conduct annual telephone surveys of residents as part of the **Behavioral Risk Factor Surveillance System (BRFSS)** to evaluate behaviors that increase risk for chronic disease, including diet, physical activity, smoking, and drug and alcohol use. Individual states report health statistics to the **National Center for Health Statistics**, and the Centers for Disease Control (CDC) compiles, analyzes, and reports data on disease prevalence. In addition, the CDC monitors air and water quality and provides support in emergencies, such as severe weather conditions that impact health and safety (**FIGURE 2.4**).

In the United States, career opportunities in public health exist in the **Commissioned Corps**, an essential component of the largest public health program in the world. Corps officers are eligible for a variety of positions throughout the HHS and certain non-HHS federal agencies and programs in the areas of disease control and prevention; biomedical research; regulation of food, drugs, and medical devices; mental health and drug abuse; healthcare delivery; and international health. Opportunities are also available at the community level in public health departments and professional organizations—for example, the American Heart Association.

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 solving problems from both a preventive and curative standpoint. Also needed are 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 with changing dynamics, while still fulfilling fundamental, long-accepted functions. **TABLE 2.3** lists achievements in public health in the United States.

FIGURE 2.4 The CDC monitors air and water quality and provides support in weather emergencies.
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TABLE 2.3 Historical Highlights of Health and Human Services in the United States

1798	Passage of an act for the relief of sick and disabled seamen, which established a federal network of hospitals for the care of merchant seamen, the forerunner of today's U.S. Public Health Service.
1862	President Lincoln appointed a chemist, Charles M. Wetherill, to serve in the new Department of Agriculture. This was the beginning of the Bureau of Chemistry, the forerunner to the Food and Drug Administration.
1871	Appointment of the first Supervising Surgeon (later called Surgeon General) for the Marine Hospital Service, which was organized the previous year.
1878	Passage of the National Quarantine Act began the transfer of quarantine functions from the states to the federal Marine Hospital Service.
1887	The federal government opened a one-room laboratory on Staten Island for research on disease, thereby planting the seed that was to grow into the National Institutes of Health.
1891	Passage of immigration legislation, assigning to the Marine Hospital Service the responsibility for the medical examination of arriving immigrants.
1902	Conversion of the Marine Hospital Service into the Public Health and Marine Hospital Service in recognition of its expanding activities in the field of public health. In 1912, the name was shortened to the Public Health Service (PHS).
1906	Congress passed the Pure Food and Drugs Act, authorizing the government to monitor the purity of foods and the safety of medicines, which is now a responsibility of the Food and Drug Administration (FDA).
1912	President Theodore Roosevelt's first White House Conference urged the creation of the Children's Bureau to combat the exploitation of children.
1921	The Bureau of Indian Affairs Health Division was created, the forerunner to the Indian Health Service.
1930	Creation of the National Institute (later Institutes) of Health, out of the Public Health Service's Hygienic Laboratory.
1935	Passage of the Social Security Act.
1938	Passage of the Federal Food, Drug, and Cosmetic Act.
1939	The Federal Security Agency was created, bringing together related federal activities in the fields of health, education, and social insurance.
1946	The Communicable Disease Center was established, forerunner of the Centers for Disease Control and Prevention (CDC).
1955	Licensing of the Salk polio vaccine. The Indian Health Service was transferred to the U.S. Department of Health and Human Services from the Department of the Interior.
1961	First White House Conference on Aging.
1962	Passage of the Migrant Health Act, providing support for clinics serving agricultural workers.
1964	Release of the first Surgeon General's Report on Smoking and Health.
1965	Creation of the Medicare and Medicaid programs, making comprehensive health care available to millions of Americans. The Older Americans Act created nutrition and social programs administered by the HHS's Administration on Aging. Head Start program was created.
1966	International Smallpox Eradication program was established; led by the U.S. Public Health Service, the worldwide eradication of smallpox was accomplished in 1977. The Community Health Center and Migrant Health Center programs were launched.
1970	Creation of the National Health Service Corps.
1971	National Cancer Act signed into law.
1975	Child Support Enforcement program was established.
1977	Creation of the Health Care Financing Administration (HCFA) to manage Medicare and Medicaid separately from the Social Security Administration.
1980	Federal funding provided to states for foster care and adoption assistance.

(Continued)

TABLE 2.3 Historical Highlights of Health and Human Services in the United States (*Continued*)

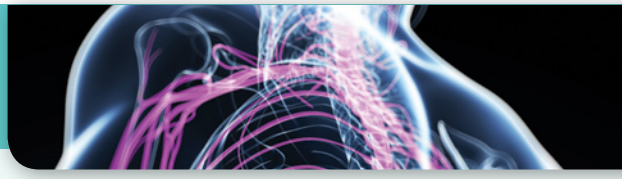
1981	Identification of AIDS. In 1984, the Public Health Service and French scientists identified HIV. In 1985, a blood test to detect HIV was licensed.
1984	National Organ Transplantation Act signed into law.
1988	Creation of the JOBS program and federal support for child care. Passage of the McKinney Act to provide health care to the homeless.
1989	Creation of the Agency for Health Care Policy and Research (now the Agency for Healthcare Research and Quality).
1990	Human Genome Project established. Passage of the Nutrition Labeling and Education Act, authorizing the food label. Ryan White Comprehensive AIDS Resource Emergency (CARE) Act began providing support for people with AIDS.
1993	The Vaccines for Children Program was established, providing free immunizations to all children in low-income families.
1995	The Social Security Administration became an independent agency.
1996	Enactment of welfare reform under the Personal Responsibility and Work Opportunity Reconciliation Act. Enactment of the Health Insurance Portability and Accountability Act (HIPAA).
1997	Creation of the State Children's Health Insurance Program (CHIP), enabling states to extend health coverage to more uninsured children.
1999	The Ticket to Work and Work Incentives Improvement Act of 1999 made it possible for millions of Americans with disabilities to join the workforce without fear of losing their Medicaid and Medicare coverage. Initiative on combating bioterrorism was launched.
2000	Publication of human genome sequencing.
2002	Office of Public Health Emergency Preparedness was created to coordinate efforts against bioterrorism and other emergency health threats.
2003	Enactment of the Medicare Prescription Drug Improvement and Modernization Act of 2003, the most significant expansion of Medicare since its enactment, including a prescription drug benefit.
2010	The Affordable Care Act was signed into law, putting in place comprehensive U.S. health insurance reforms.

Data from: U.S. Department of Health and Human Services. ***HHS Historical Highlights***. August 14, 2014. Internet: http://www.hhs.gov/about/historical-highlights/.[21]

HEALTH CARE IN THE TWENTY-FIRST CENTURY

From its humble, unscientific, and often haphazard beginnings to the present multibillion-dollar industry, the private U.S. healthcare 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 21st century, the system must face and solve yet more problems. Preventive health care will play an important role in achieving health care for all through recently expanded federally funded primary care clinics and public health clinics funded by city and state governments. The ACA has increased the numbers of people that have access to affordable health care and is changing the way that health care is financed. American ingenuity will face a difficult challenge in formulating a workable, affordable system for all people.

LEARNING PORTFOLIO



Study Points

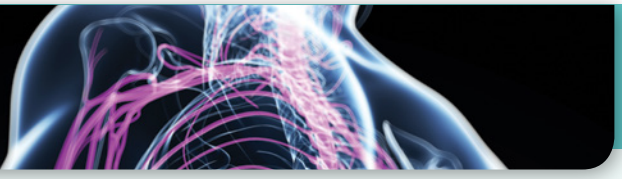
1. The healthcare industry is a complex system of hospitals, ambulatory care, laboratories, pharmaceutical and medical equipment manufacturers, and private and government funded programs.
2. Hospitals are the second largest industry and the largest employer of healthcare workers in the United States.
3. Direct healthcare services provided by the federal government are limited to the U.S. Department of Defense, the U.S. Veterans Administration, and Indian Health Services.
4. Four broad categories of health care are health promotion, disease prevention, diagnosis and treatment, and rehabilitation.
5. Federally funded primary care health centers serve high need and the medically underserved living in urban and rural areas.
6. Privately funded free clinics serve those who are uninsured—the unemployed and underemployed as well as undocumented immigrants and members of the LGBT community.
7. Hospitals provide patient care, train health professionals, conduct research, and provide public education for consumers and members of the community.
8. Four major forces responsible for the development of hospitals in the United States are 1) aseptic techniques, 2) advances in medical education, 3) professional development of nurses, and 4) specialized technology.
9. Hospitals are categorized by function, length of stay, and financial support or ownership. Public hospitals are financed by the government while private hospitals are financed by businesses, churches, physicians, and others. There are more community, nonprofit hospitals than all other categories of hospitals.
10. Most health care is provided in ambulatory settings by a variety of health professionals.
11. The Affordable Care Act requires that all insurance policies include mental health services; however, only about half of those experiencing symptoms of mental or substance use disorders seek professional help.
12. The American Hospital Association developed the Patient Care Partnership as a guide for hospital personnel in providing care to patients.
13. The most important federal agency responsible for the health of the United States is the U.S. Department of Health and Human Services, which administers 11 operating divisions responsible for Medicare, Medicaid, public health, biomedical research, food and drug safety, disease control and prevention, mental health services, and Indian Health Services.

Issues for Discussion

1. View the video, *American's Health Centers: An Enduring Legacy, Value for Today & Tomorrow* (March 21, 2015. National Association of Community Health Centers. Internet: https://www.youtube.com/watch?v=aV9jJpX0PZI). Discuss the history of federally funded national health centers. Discuss the medical services provided at these centers and the medical and economic benefits for local communities.
2. View the cartoon video, *My Hospital—Advancing Health in America,* from the American Hospital Association. Discuss community outreach programs of the hospital and how health care is coordinated with other health service facilities in the wider community that make up health care in the entire community (Internet: https://www.youtube.com/watch?v=NFiLJksGOxA).
3. Go to the Centers for Disease Control (CDC) webpage and link to Emergency Preparedness and Response and select one disaster to review ways to prepare before, during, and after the event, especially regarding food and water safety (Internet: http://emergency.cdc.gov/disasters/). Which weather-related disasters are common in your area? What can you do to be prepared to prevent injury or illness? Which agencies in your community provide support during emergencies?
4. Review the infographic entitled *Multicultural Mental Health Infographic* from the National Alliance for Mental Illness (Internet: https://www.nami.org/NAMI/media/NAMI-Media/Infographics/Infograph_multicultural_mhfacts.pdf). What are the statistics for mental illness and severe mental illness? At what age does chronic mental illness appear? Which ethnic group has the highest incidence of mental illness? Which other minority groups have a high incidence of mental illness?

Enrichment Activities

1. Read the story of Don Dean, who was treated for a rare form of cancer at the National Cancer Institute (NCI) of the National Institutes of Health (NIH) using *precision medicine* based on determining the genetic basis for the disease and targeted treatment. (Dean, D. *The Deans' Genes and Precision Medicine: A Journey of Discovery and Hope*. September 17, 2015. Internet: http://www.hhs.gov/blog/2015/09/17/deans-genes-and-precision-medicine.html)
2. Go to the Indian Health Services' website to find out what healthcare services are provided and how the quality of the health services are monitored (Internet: http://www.ihs.gov/forpatients/healthcare/)
3. Review the video about behavior health careers in the public health service (DoD-PHS Partnership for



LEARNING PORTFOLIO

Psychological Health: Brooke Army Medical Center, Fort Sam Houston, TX. Internet: http://www.usphs.gov/newsroom/multimedia/). Based on information from the video what advantages and disadvantages are there for working in behavior health for the public health service? What are some of the qualities needed to be successful in this position?

4. Review the article posted on *Fact Tank* of the Pew Research Center, *5 Facts about Illegal Immigrants in the U.S.* (Internet: http://www.pewresearch.org/fact-tank/2015/07/24/5-facts-about-illegal-immigration-in-the-u-s/). Which states have the highest concentration of illegal immigrants? Which countries are represented among illegal immigrants? How do illegal immigrants receive health care?

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CHAPTER 3

Paying for Health Services

Objectives

After studying this chapter, the student should be able to:

- Explain how public healthcare systems are financed.
- Characterize the populations served by Medicare, Medicaid, and the Children's Health Insurance Program (CHIP).
- Compare traditional and contemporary methods of reimbursement for healthcare services.
- Describe the similarities and differences of managed care organizations used by private insurance.
- Identify the role of the government in the expansion of health care.

Key Terms

Accountable care organization (ACO)
Affordable Care Act (ACA)
American Medical Association (AMA)
Blue Cross and Blue Shield
Bundled payment
Capitation
Centers for Medicare and Medicaid Services (CMS)
Children's Health Insurance Program (CHIP)
Copayment
Deductible
Diagnosis-related groups (DRGs)
Distributive health care
Dual eligible
Exclusive provider organization (EPO)
Fee-for-service payment
Federal poverty level (FPL)
Fringe benefit
Government healthcare financing
Health maintenance organizations (HMOs)
Home and community based-services (HCBS)
Hospital Readmission Reduction Program (HRRP)
Long-term services and support (LTSS)
Managed care organizations (MCOs)
Medicaid
Medicare
Medicare Advantage Plan
Preferred provider organizations (PPOs)
Private health insurance
Premium
Out-of-pocket
Reimbursement

HEALTHCARE FINANCING

Health care in the United States is funded through a variety of private payers and public programs. Public spending represents expenditures by federal, state, and local governments. Private funding is primarily through **private health insurance**, with 57% of Americans having employer- and private health insurance–sponsored health insurance in 2015. A significant portion of public health spending can be attributed to the programs administered by the **Centers for Medicare and Medicaid Services (CMS)**—**Medicare, Medicaid**, and the **Children's Health Insurance Program (CHIP)**.[1] In 2014, Medicare represented 14% of the federal budget and Medicaid represented 9% of the federal budget, so that a total of 23% of the total budget is devoted to both Medicare and Medicaid (FIGURE 3.1).[1]

The remaining portion of publicly funded health care includes expenditures for the following:

- the U.S. Department of Defense healthcare program for military personnel
- the U.S. Department of Veterans' Affairs health program
- workers' compensation programs
- maternal and child health services
- school health programs
- subsidies for public hospitals and clinics
- Indian healthcare services
- substance abuse and mental health activities
- medically related vocational rehabilitation services
- medical research
- the construction of public medical facilities and the purchase of equipment[2]

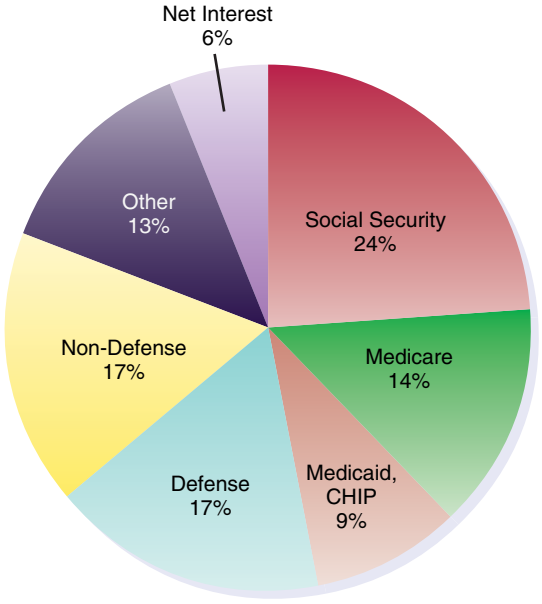

FIGURE 3.1 Medicare and Medicaid share of federal budget, 2014.
Data from: *The Facts on Medicare Spending and Financing.* Fact Sheet. July 24, 2015. Kaiser Family Foundation. Internet: http://kff.org/medicare/fact-sheet/medicare-spending-and-financing-fact-sheet/

In addition to private insurance, privately funded health care includes out-of-pocket expenditures, philanthropy, and non-patient revenues (such as revenue from gift shops and parking lots), as well as health services that are provided at employers' establishments.[2]

REIMBURSEMENT FOR HEALTHCARE SERVICES

The traditional method of **reimbursement** for health services before passage of the **Affordable Care Act (ACA)** was *fee-for-service*, that is, payment for each service at the time of service.

Under fee-for service, the provider—doctor, hospital, or clinic—is financially rewarded for volume of services performed—for example, the number of laboratory tests, number of surgeries, number of days in the hospital—rather than for the quality and cost control (value) of those services. In an effort to control rising healthcare costs, both public and private health insurance programs have moved to **capitation**, defined as paying the practitioner or hospital a fixed amount for a specific service. In capitation, the insurance pays a set fee to cover all the services—fee-for-service pays only for the particular service(s) rendered (itemized) at a given time.

An example of capitation for private insurance is **health maintenance organizations (HMOs)**, which limit consumer choice to health professionals and hospitals that contract with the HMO. Both Medicare and Medicaid use long-term contracts with providers for a population or group of patients. An examples of long-term contracts is **managed care organizations (MCOs)**, a healthcare delivery system designed to manage cost, utilization, and quality. State Medicaid agencies contract with MCOs that accept payment for a specific dollar amount per member per month (capitation) regardless of the services delivered. **Medicare Advantage Plans** are a form of MCO; Medicare pays a fixed dollar amount per enrollee per month to the insurance company offering Medicare Advantage Plans. Providers are motivated to give quality care rather than increase the number of procedures or hospitalizations when patients are enrolled in an MCO.

Shifting away from fee-for-service to improve quality while reducing costs requires changed expectations for both consumers and providers. Under fee-for-service, there were few limits on the length of hospital stay or number of doctor visits; however, MCOs often require preapproval for surgery and other costly treatments. The consequence for consumers is that scheduling non-emergency surgery and other procedures will involve a waiting period. Consumers will need to be knowledgeable about their insurance requirements for treatment.

In an effort to reduce costs and improve quality, the CMS set a goal of reducing Medicare fee-for-service payments to providers (doctors, hospitals) to 10% by 2018.

Changing from fee-for-service to capitation is scheduled to occur over several years. One of the changes CMS made to reward quality of care instead of volume is the **Hospital Readmission Reduction Program (HRRP)**, in which hospitals receive lower reimbursement rates for all patients on Medicare if hospital readmission occurs sooner than 30 days after discharge (see Chapter 5 for more information). Other CMS programs designed to improve quality and reduce costs are **bundled payments** and **accountable care organizations (ACOs)**; both are examples of capitation. Bundled payments are made for an episode of care; for example, hospital and home-care services, including physical therapy for a patient receiving hip-replacement surgery. ACOs address quality and cost for a population; for example, payment for comprehensive care for end-stage renal disease for patients receiving regular dialysis.[3]

GOVERNMENT-FUNDED HEALTH INSURANCE

Medicare and Medicaid are government or public health insurance programs that benefit one in three Americans. In 2015, Medicare and Medicaid represented 39% of national health spending, 23% of the federal budget, and generated 43% of hospital revenue.[4] Sources for federal funding of Medicare are 41% from general revenue, 38% from payroll taxes paid by both the employee and the employer, and 13% from premiums paid by those enrolled in Medicare.[1]

The Medicare program is a federal health program for people aged 65 years and older, certain disabled people younger than 65, and any adult with permanent kidney failure (end-stage renal disease) or amyotrophic lateral sclerosis (ALS, or Lou Gehrig's disease). Patients on Medicare are entitled to the same benefits and care as those with private insurance. The main difference is that the government pays the healthcare bills instead of the individual or private insurance. Medicare pays for many healthcare services—hospitalizations, doctor visits, and prescription drugs. It also covers the cost of short-term stays in a skilled nursing facility, home health care, hospitals, and preventive services such as immunizations and cancer screenings. In 2015, Medicare provided health insurance for 55 million people—9 million with permanent disabilities under age 65 and 46.3 million 65 years of age and older.[3]

Medicaid is the federal–state cooperative health insurance plan for those who are not eligible for health insurance through an employer and cannot afford to buy health insurance through the Marketplace. The program is jointly funded by the federal and state government and is administered by individual states. People with incomes below poverty level established by a state can use this government-sponsored health insurance program. Until Medicaid was expanded as a result of the ACA, only certain low-income individuals were eligible: U.S. citizens or legal immigrants, pregnant women, children, parents of low-income children, seniors, and those with disabilities. To encourage states to expand family planning services offered under Medicaid, the federal government paid for 90% of state expenditures for all family planning services since 1972.[6]

TABLE 3.1 Mandatory Health Services Required by Medicaid Programs

Inpatient hospital services	Laboratory and X-ray services
Outpatient hospital services	Family planning services
Early and periodic screening, diagnostic, and treatment services, birth to 21 years	Certified pediatric and family nurse practitioner services
Nursing facility services	Nurse-midwife services
Home health services	Freestanding birth center services
Physician services	Transportation to medical care
Rural health clinic services	Tobacco cessation counseling for pregnant women
Federally qualified health centers (FQHC)	

Data from: Medicaid Information by Topic. Medicaid.gov

Some health services for those on Medicaid are considered mandatory by the federal government, while others are considered optional. Many states cover additional optional benefits such as dental care, vision care, prescription drugs, physical and occupational therapy, and others (**TABLE 3.1**).[7]

States are required to cover all children and pregnant women living in households with incomes up to at least 138% of the **federal poverty level (FPL)**; however, about half of the states cover children from households with higher incomes—above 250% of the FPL. Since implementation of the ACA, states that chose to expand Medicaid cover adults at 133% of the FPL (**FIGURE 3.2**).[8]

In 2015, Medicaid provided coverage to one in five Americans, which makes it the nation's largest public health insurance program. Medicaid covered more than one-third of all children, more than three-fourths of children living in households below 100% of the FPL, and nearly half of all births.[4] Medicaid is also the single largest payer for mental health services in the United States, and for adults with developmental disabilities. Those enrolled in both Medicare and Medicaid are **dual eligibles**. Medicaid covers one in five Medicare beneficiaries and almost two-thirds of all nursing home residents. Medicaid also covers additional services beyond those provided under Medicare—for example, paying for health insurance premiums, prescription drugs, eye glasses, and hearing aids. Services covered by both programs are paid first by Medicare, with Medicaid filling in the difference up to the state's payment limit (**FIGURE 3.3**).[9]

FIGURE 3.2 A mandatory requirement for Medicaid is early and periodic screening of children.

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Individual states administer Medicaid programs, and each state sets its own guidelines regarding eligibility and services. States receive matching funds from the federal government to help pay for Medicaid coverage. The matching rate ranges from 50% to 75% depending on a state's per-capita income and changes from year to year; wealthier states receive lower federal matches, and poorer states receive higher matches. A temporary source of funding Medicaid for states came as a result of the ACA. A provision of the ACA was that the federal government paid state governments the costs of expanding Medicaid at the level of 100% from 2014 through 2016, with a gradual decrease to 90% by 2020. State Medicaid programs can establish cost-sharing in the form of copayments for outpatient visits, hospitalizations, and other care; fees are based on income and are nominal.

The CHIP, known from its inception until March 2009 as the State Children's Health Insurance Program (SCHIP), received federal funding through fiscal year 2019 to provide healthcare coverage for low-income children—generally those below 200% of the FPL who do not qualify for Medicaid and would otherwise be uninsured.

Federal and state governments jointly finance CHIP similar to the way Medicaid is funded. States may elect to provide coverage to qualifying children by expanding their Medicaid programs or through a state program separate from Medicaid. A number of states have also been granted waivers to cover parents of children enrolled in CHIP. As a result of the ACA, with the expansion of both Medicaid and CHIP, there was a 23% increase in the total number enrolled, and as of July 2015, a total of 30 million children enrolled in Medicaid and CHIP.[8]

FIGURE 3.3 Medicaid covers the cost of nearly two-thirds of nursing home residents.

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HISTORY OF HEALTH INSURANCE IN THE UNITED STATES

Health insurance coverage has been a hotly debated topic in the United States since the early 1900s. From the beginning, the main issue has been whether health insurance should be publicly or privately financed. Government-sponsored healthcare efforts were initiated between 1915 and 1920 at the state level and in the 1930s at the federal level. However, the only outcome of these efforts was limited financial support for public health and healthcare services for mothers and children. Congress enacted legislation to improve access to medical care for those on public assistance in the 1950s and for the needy elderly in the 1960s.[2]

The most significant change in **government healthcare financing** was when Congress approved Medicare and Medicaid with the passage of Title XVIII and Title XIX, respectively, of the Social Security Act of 1965. Medicare funded health care for all elderly regardless of income, and Medicaid was established for those on public aid. In 1973, Medicare was expanded to include those with certain disabilities, chronic kidney disease, and ALS. Congress has expanded Medicaid for those living at or near the poverty level, including working and jobless families and individuals with diverse physical and mental conditions, and low-income seniors. Further expansion of health care for children came with the passage of Title XXI of the Social Security Act, a program initiated by the Balanced Budget Act of 1997.[2] The ACA allowed states to expand coverage of low-income adults, although not all states chose to expand Medicaid (see Chapter 5 for more details).

Private health insurance started with hospital coverage in the 1920s because of increased consumer demand and increased costs for hospital care. The first private hospital insurance plan was developed in 1929, when a group of Dallas teachers contracted with Baylor University Hospital to provide 21 days of hospitalization for a fixed $6.00 payment. The contract ensured that teachers had access to hospital care and that the hospital was paid. Community hospitals later joined together to develop prepaid hospital plans to avoid competition among hospitals. These plans eventually combined under the name of Blue Cross and allowed subscribers a free choice of physician and hospital. Expanding medical services became a reality after World War II when the federal government began subsidizing hospital construction and medical research.[10]

Physicians began to organize prepaid plans for physician services with the development of **Blue Cross and Blue Shield**, when in 1939 the California Physicians' Service began the first prepayment plan to cover physicians' services. Employees with incomes less than $3,000 annually were eligible for a fee of $1.70 per month. Later, the **American Medical Association (AMA)** encouraged state and local medical societies to form their own prepayment plans. In 1946, these physician-sponsored plans affiliated and became known as Blue Shield. These plans offered medical and surgical benefits for hospitalized members, and some plans covered outpatient doctors' visits. Doctors charged patients the difference between their actual charges and the amount for which they were reimbursed by Blue Shield. This allowed doctors to maintain control and to price discriminate by charging different prices to different patients.[10]

Other private insurance companies began offering health insurance after Blue Shield demonstrated that financial loss could be prevented by offering health insurance only to the young and healthy who were employed. The government aided the expansion of private insurance companies by excluding employers' contributions to health insurance from taxable income. During World War II, private health insurance coverage grew rapidly as an employee **fringe benefit** because the government limited direct wage increases. Demand for health insurance increased as medical technology advanced.[10]

The first managed care insurance programs were started with HMOs—Kaiser Permanente in California and Group Health Cooperative in Washington state. Kaiser Permanente started in California during the depression of the 1930s and expanded to mostly the western states of Washington, Oregon, Hawaii, and Colorado.[11] Group Health Cooperative began in Washington in 1947 and expanded into Idaho.[12] Kaiser evolved from healthcare programs to cover on-the-job injuries of workers (now known as Workers' Compensation) constructing the Los Angeles Aqueduct and the Grand Coulee Dam. The HMO started with one physician, Stanley Garfield, MD, in the small town of Desert Center, as an effort to receive payment for treating sick and injured workers during the building of the aqueduct. Later, Dr. Garfield established health care for workers of the Kaiser Shipyards in the San Francisco Bay area during World War II. Thereafter, the HMO expanded through efforts of unions, and the Kaiser HMO became available to the public on October 1, 1945.[11]

By the mid-1970s, the United States entered a new stage in the history of health insurance. **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 anti-inflationary measures. Attempts to slow the increasing costs of health care included industry-wide wage and price controls initiated in 1971, followed by Medicare policies to slow price increases by doctors and hospitals and to decrease the unnecessary use of hospital services. During the 1980s, there was another radical change in the way health care was financed. The term *managed care* came into common usage and remains a significant aspect of the sector's current evolution.

In 1983, Congress passed a prospective payment bill, under which hospitals are paid a set amount for each patient in any of the established disease categories and **diagnosis-related groups (DRGs)**. This means that Medicare would not pay beyond the set fees for the identified type of illness, no matter how long the patient was hospitalized or what services he or she received. As a result, Medicare hospital admissions dropped, and the lengths of stay became shorter—but Medicare payments continued to rise. In 1985, 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 "customary, prevailing, and reasonable" system with a fee schedule that was implemented in 1992 in an effort to control healthcare costs.[13]

A shift in the balance of power between unions and management is another dramatic change that has radically altered health care. The 1980s saw a weakening of union bargaining power and a high unemployment rate. These two factors enabled management 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 healthcare costs. Employees had come to expect 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 sources of care.

The oversupply of physicians led to competition, the reorganization of medical practice, advertising for clients, and increased medical costs. 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 incentives, making access to a medical education easy for qualified individuals.

Medical care has shifted from the hospital into the community because revolutionary advances in medical technology created a new dimension in healthcare delivery. Examples of recent advances are portable, mobile units for diagnosing almost every known disease without hospital admission—magnetic resonance imaging (MRI), mammography, ultrasound, telemedicine, 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 have led to what is called **distributive health care**, which is changing the healthcare system as well as creating different ways of paying for health care.[14]

MANAGED CARE: HMOs, PPOs, AND EPOs

MCOs are divided primarily into HMOs, **preferred provider organizations (PPOs)**, and **exclusive provider organizations (EPOs)**. 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*, was coined in the 1970s to describe independent plans that offer benefits to an enrolled group of subscribers. HMOs are a form of prepaid health insurance that only covers care provided by providers and healthcare facilities inside the HMO network. Patients must have a referral from a primary care provider to see a specialist. The consumer's cost is generally less than that in other facilities. Physicians and other providers agree to provide certain services for a specified cost, often with a cap on total patient visits or procedures during a benefit period. 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 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.

PPOs are another option open to the consumer for the delivery of health care. PPOs cover care provided both inside and outside the plan's provider network. However, consumers typically pay a higher percentage of the cost for out-of-network care. PPOs comprise groups of physicians or a hospital that provides companies with comprehensive health services at a discount. The majority of Americans with private health insurance receive their care through a PPO. The benefits of a PPO are choice of provider and hospital, and cost control.

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 healthcare services, or any combination of these. PPOs are fee-for-service systems, as opposed to HMOs, which are capitated (that is, insurance pays providers a set fee in advance to cover all required services that 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% for hospital services performed by a physician in a hospital environment. The essential elements of a PPO, then, are as follows: fee-for-service, contractual arrangements, organization of providers, discounts, free choice, and economic incentives. Currently, the majority of Americans with private health insurance receive medical care through a PPO healthcare delivery system.

EPOs are similar to HMOs since services outside of the network are not covered. The primary difference between an HMO and EPOs is that an EPO usually doesn't require that the primary care provider make referrals to specialists.

The biggest impact on healthcare delivery 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 the remainder will compete based on convenience, price, and quality.

PRIVATE HEALTH INSURANCE COVERAGE IN THE UNITED STATES

The availability of employer-sponsored coverage has been declining, with a drop from 69% to 57% between 2000 and 2015. Also, the cost of health insurance premiums for a family increased 61% between 2000 and 2015. Most Americans with private health insurance belong to a group plan financed through their employer. Of those with employer-based health insurance, the majority are enrolled in a PPO (52%), HMO (14%), or high-deductible health plan with a savings option (HDHP/SO) (24%).[15]

In 2015, the annual **premium** for employer-based health insurance for family coverage was $17,545; for single-person coverage of the worker alone, it cost $6,251. Workers and employers share in the cost of the premiums, with single workers contributing 18% of the cost ($1,071 per year) and workers with families contributing 29% of the cost ($4,955 per year). Workers share in other costs as well. The average annual yearly **deductible** in 2015 was $1,077, and most plans require **copayments** for office visits, hospitalizations, outpatient surgery, and prescription drugs. Some health insurance policies have an annual **out-of-pocket** maximum that ranges from less than $1,500 to $6,000.[15]

In an effort to control healthcare costs, the ACA has a provision to limit the cost of premiums as well as health benefits. Beginning in 2020 employer health plans will be subject to a 40% excise tax for premium amounts above the thresholds specified by the ACA.[17] The thresholds are $10,200 for single coverage and $27,000 for family coverage. Change in private health insurance to limit the cost of premiums is expected, with greater costs being shared by the employees through higher deductibles and copayments.

Employers have already made changes to keep healthcare costs down. Recent positive changes are employer wellness programs to promote a healthier work force. Employees are encouraged to participate in health screenings that include body weight, cholesterol, blood pressure, and nutrition; employers offer incentives for employees to participate in wellness programs such as weight loss and smoking cessation.[15] Employers who promote wellness programs expect a reduction in healthcare costs for their employees, including the cost of providing health insurance.

HEALTHCARE EXPENDITURES

In 2014, Medicare benefit payments totaled $597 billion; about 25% covered hospital inpatient services, another 25% covered private insurance through the Medicare Advantage program, 12% covered physician services, and 11% covered Medicare Part D prescription drugs. A total of 8% covered skilled nursing facilities and home health care (**FIGURE 3.4**).[18]

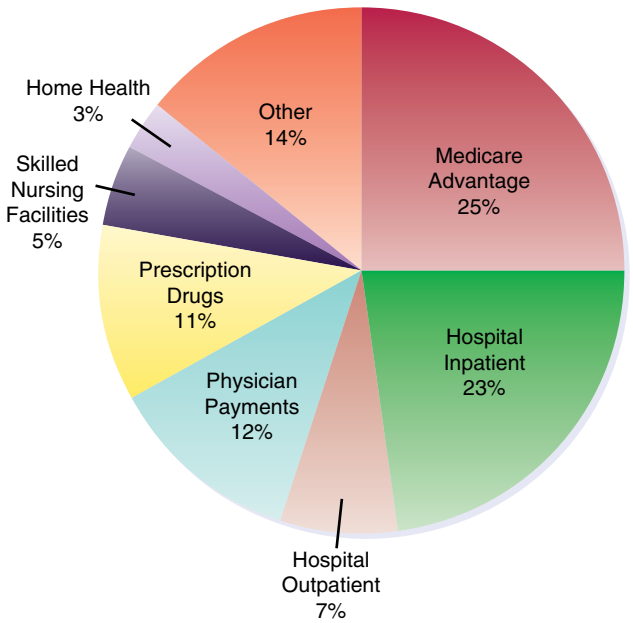


FIGURE 3.4 Medicare benefits payments, 2014.

Data from: *The Facts on Medicare Spending and Financing*. Fact Sheet. July 24, 2015. Kaiser Family Foundation.

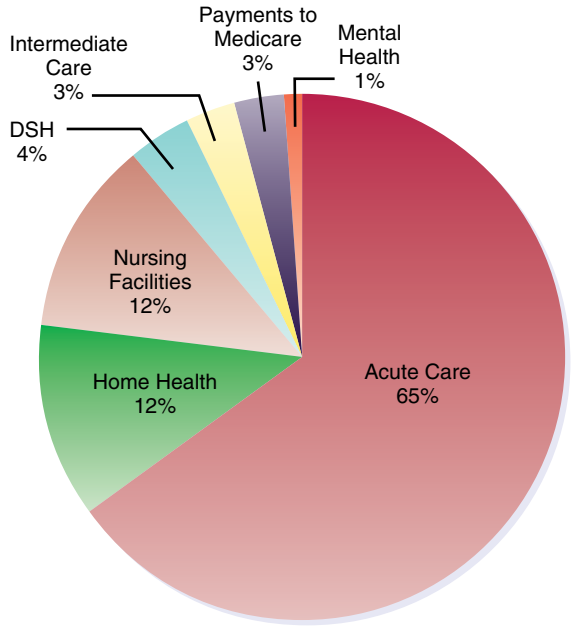


FIGURE 3.5 Medicaid expenditures, 2013.

Data from: Kaiser Family Foundation. Internet:http://files.kff.org/attachment/issue-brief-medicaid-moving-forward) Note: DSH refers to supplemental payments made to hospitals that have a disproportionate share of Medicaid and uninsured patients, such as a public city hospital.

In 2013, total Medicaid expenditures were nearly $440 billion, with two-thirds spent for acute care, including hospital care and payments to MCOs. One-fourth was spent for long-term services, including nursing facilities, intermediate care for the intellectually and developmentally disabled, and home care. Nearly two-thirds of total Medicaid expenditures cover either the elderly or persons with disabilities, although these two groups represent only one-fourth of Medicaid enrollees (FIGURE 3.5).

Dual eligibles—that is, those on both Medicare and Medicaid—account for 40% of Medicaid expenditures, mostly for long-term care services including nursing care facilities and **home and community-based services (HCBS)**. A small percentage of those on Medicaid account for a large percentage of total Medicaid spending. Only 5% of Medicaid enrollees accounted for half of all Medicaid expenditures for both acute- and long-term care services.[19]

CMS has been working with individual states, consumers and providers to develop **long-term services and supports (LTSS)** in the community instead of in institutions for people with disabilities and chronic conditions. Goals are to offer consumers greater choice and control with access to quality services, resulting in optimal outcomes including health, quality, of life and independence.[20] One of the significant changes over the past decade is that all states have expanded HCBS and have been able to reduce the number residing in institutions as well as the cost for providing LTSS. Distribution of spending for HCBS in 2013 was 72% for the developmentally disabled, 40% for the elderly or people with physical disabilities and 36% for those with serious mental illness or emotional disturbance. There is a wide variation in the percent of total LTSS being spent for HCBS by states, from 26% in Mississippi to 79% in Oregon, with the national average of an equal amount spent for HCBS and institutional services. In addition, the percentage of Medicaid expenditures for LTSS has decreased from a high of 40% in 1997 to a low of 34% in 2013.[21] Other evidence that HCBS is less costly than institutionalization is that in 2008, yearly costs in California for HCBS was $9,129 compared to $32,406 for institutional care.[22]

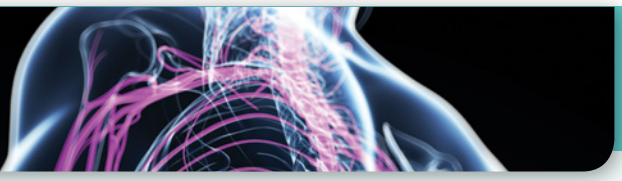
One of the challenges of providing HCBS is that the cost of room and board is not reimbursed by Medicaid for people with intellectual or developmental disabilities in home-based settings, whereas room and board costs are reimbursed for residents living in institutions. A barrier for expanding HCBS, therefore, is providing affordable and accessible housing for Medicaid beneficiaries. Other challenges are the need to develop performance standards for HCBS that already exist for institutional care and to link housing services with HCBS for those with mental illness or substance abuse disorders.[22] Residential facilities are regulated by both state and federal agencies for compliance with standards of care. HCBS lacks this oversight, although CMS has started the process of developing policies and mechanisms to ensure quality care for those who live in the community.

EFFECT ON HEALTHCARE PROVIDERS

Changes in the way health care is being paid for in both the public and private sectors will impact healthcare personnel and career opportunities. Since more healthcare services are currently being delivered in the community instead of in hospitals, nursing care facilities, and other institutions, future healthcare workers can expect to find more jobs in clinics, ambulatory care centers, and home care agencies than in institutions. The health field of the future remains full of challenges for health personnel. Health care as it is known will not disappear, but may change considerably.

SUMMARY

Health care in the U.S. is funded through a combination of private and government funds. Private health insurance is jointly funded through premiums paid by both the employee and the employer and is the primary source of privately funded health care. As a result of the Affordable Care Act, individuals without access to private insurance through an employer can purchase health care through an exchange and receive government subsidies to share in the cost of the premiums. The two major sources of government funded health care are Medicaid and Medicare. Medicaid was designed for low income children and pregnant women and Medicare was designed for those over 65 years of age. Medicaid is jointly funded by federal and state governments and is administered by individual states, while Medicare is funded and administered by the federal government. Even though Medicare and Medicaid are supported by government funds, individuals share in the cost through premiums or through co-payments. Managed Care Organizations are used to manage healthcare utilization, cost, and quality through contracts in both the private and government funded sectors.

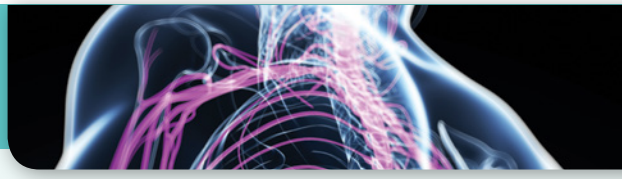


LEARNING PORTFOLIO

Study Points

1. Congress approved legislation for the public health programs Medicare and Medicaid in 1965. Medicare is a federal health program for those 65 years and older and for the disabled under 65 years of age. Medicaid was designed primarily for low-income children and pregnant women.
2. The Centers for Medicare and Medicaid (CMS) administers public health programs—Medicare, Medicaid, and the Children's Health Insurance Program (CHIP).
3. Medicaid and CHIP are jointly funded by the federal government and individual state governments for those not eligible for insurance through an employer and for those who cannot afford to purchase health insurance through the Marketplace.
4. Medicaid funds health care for one in five Americans and is the largest public health insurance program in the U.S.; Medicaid covers the cost of health care for one-third of all children, one-half of all births, two-thirds of long-term care and is the largest payer for mental health services.
5. Individuals enrolled in both Medicare and Medicaid are designated as *dual eligibles*; Medicaid covers one in five low–income Medicare patients. Dual eligibles account for 40% of Medicaid expenses, primarily for long-term support services either in a nursing care facility or for home and community-based services (HCBS).
6. In 2014, both Medicare and Medicaid represented 23%, or nearly one-fourth, of the total federal budget. Both programs provide health care for one in three Americans and account for about 40% of national health spending as well as 40% of hospital revenue.
7. The traditional method of reimbursement for health services is fee-for-service or payment for the volume of services—for example, number of procedures or surgeries or number of lab tests. Capitation is a form of reimbursement or defined payment for a designated set of healthcare services used as a way to control healthcare costs.
8. Managed care organizations (MCOs) are health insurance programs that control healthcare costs by agreeing to provide health services in exchange for a set dollar amount from Medicare or Medicaid for each enrollee.
9. Private health insurance started in the 1920s to cover the cost of hospital care. Prepaid private health insurance for physician services started in the 1930s with the development of Blue Cross and Blue Shield.
10. The federal government has supported medical education with grants, scholarships, and low-interest loans for students to ensure an adequate supply of trained physicians.
11. Managed care organizations (MCOs) in the private health insurance industry include health maintenance organizations (HMOs), preferred provider organizations (PPOs), and exclusive provider organizations (EPOs).
12. HMOs only reimburse for health services to providers and facilities within a network and require specialty referrals from a primary care provider. PPOs reimburse for health services, but reimbursement is less for providers and facilities out of the network. EPOs are similar to HMOs except that specialty referrals from a primary care provider are not required.
13. All MCOs contract with providers (hospitals, physicians, laboratories, and other services) and agree to provide all healthcare services for a set price for each enrollee in exchange for premiums paid by individuals and/or the employer.
14. The availability of employer sponsored private insurance decreased from 69% to 57%, and the cost of health insurance premiums increased 61% between 2000 and 2015. The majority of employees are enrolled in PPOs (52%) or high-deductible health plans with a savings option (24%). The employee share of the cost of yearly premiums was $1,071 for an individual and $4,955 for families in 2015.
15. Employers offer incentives for employees to participate in employer-sponsored wellness programs to keep employees healthy and control healthcare costs for the employer.
16. About one-fourth of Medicare payments in 2014 were for inpatient hospital services, one-fourth for the MCO Medicare Advantage, 12% for physician services, 11% for prescription drugs, and 8% for skilled nursing facilities and home care.
17. Two-thirds of Medicaid payments in 2013 were for inpatient hospital care and MCO payments and one-fourth for long-term support services (LTSS); nearly two-thirds of Medicaid expenditures were to cover the costs of caring for either the elderly or the intellectually or developmentally disabled.
18. The percentage of individuals receiving LTSS in the community has gradually increased while the percentage receiving care in institutions has decreased.

LEARNING PORTFOLIO



Issues for Discussion

1. View the YouTube video, *Health Insurance Explained*, from the Kaiser Family Foundation (Internet: http://kff.org/health-reform/video/health-insurance-explained-youtoons/?utm_source=kff&utm_medium=tile&utm_content=home&utm_campaign=consumer). After viewing the video, define these terms: premium, deductible, copay, out-of-pocket, and provider network.
2. View the 17-minute video, *Medicine and Medicaid at 50*, from the Kaiser Family Foundation (Internet: http://kff.org/medicare/video/medicare-and-medicaid-at-50/). As you view the video, answer these questions:
   - Which U.S. president was the first to propose Medicare?
   - Which president signed the Medicare and Medicaid legislation, and in which year?
   - In what year did Medicaid begin coverage of the permanently disabled?
   - In what year was Part D for Medicare added and which president signed the bill into law?
3. View one of the 10 videos of personal stories of those receiving Medicaid benefits from Kaiser Family Foundation. *Faces of Medicaid* (Internet: http://kff.org/medicaid/video/faces-of-medicaid/). For the video that you reviewed, answer these questions:
   - What were the health problems that the individual or family experienced that required treatment?
   - Did the individual or family have other health insurance?
   - What services did Medicaid provide?

Enrichment Activities

1. Take the self-study *Health Insurance Quiz* from the Kaiser Family Foundation (Internet: http://kff.org/quiz/health-insurance-quiz/).
2. Read the following article that explains how health care evolved from the Middle Ages to now. Review the history of efforts to change the U.S. healthcare system to a universal or national health care system, and opponents of universal health care (McGuire PA. *Ninety-Eight Years of Almost: The Push for National Health Insurance*. Issue Brief. May 2010. American Public Health Association. Internet: http://www.apha.org/~/media/files/pdf/factsheets/healthinsurance2.ashx).
3. Review the fact sheet, *Glossary of Health Coverage and Medical Terms*, posted on the U.S. Department of Labor website. Study page 4, which explains how deductibles, copayment, and out-of-pocket limits are defined for a particular consumer (Internet: https://www.cms.gov/CCIIO/Resources/Regulations-and-Guidance/Downloads/Uniform-Glossary-12-19-14-FINAL.pdf).

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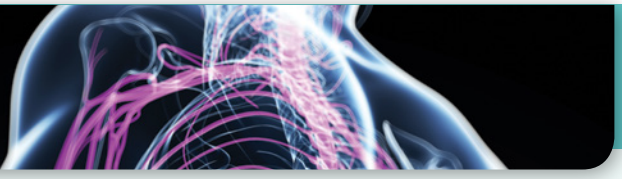

LEARNING PORTFOLIO

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CHAPTER 4

Aging, Health, and Long-Term Care

Objectives

After studying this chapter, the student should be able to:

- Describe projected changes in demographics in the U.S.—age, ethnicity, and race—through 2050.
- Discuss how aging and disease impact the ability to complete basic activities of daily living (ADLs).
- Compare options for long-term care for the physically and intellectually disabled and older adults.
- Summarize Medicaid benefits for low-income older people.
- Explain how shifts in demographics will impact the skills and training needs of healthcare workers.
- Define the role of health literacy in delivering quality health care.

Key Terms

Activities of daily living (ADLs)
Aging Network
Alzheimer's disease
Area Agencies on Aging (AAAs)
Caregiver
Centers for Medicare and Medicaid Services (CMS)
Continuing care community
Demographic
Frail elderly
Geriatrics
Health literacy
Healthy People 2020
Home health agencies (HHAs)
Instrumental activities of daily living (IADLs)
Intermediate care facilities for people with intellectual disability (ICF/ID)
Long-term services and support (LTSS)
Medicaid spousal impoverishment provisions
Medicare Advantage
Medicare Supplemental Health Insurance
Old-old
1973 Older Americans Act (OAA)
Omnibus Budget Reconciliation Act of 1987 (OBRA 87)
Preadmission Screening and Resident Review (PASRR)
Program for All-Inclusive Care for the Elderly (PACE)
Senior center
Skilled nursing facility (SNF)
U.S. Administration on Aging (AOA)

THE IMPACT OF FUTURE DEMOGRAPHIC CHANGES ON HEALTHCARE NEEDS

In Chapter 1, we summarized trends that will impact health care services and health careers. This chapter briefly explores the role of **demographic** changes in determining the nation's future healthcare needs. Because the population aged 65 years and older will continue to increase rapidly through the year 2020 and beyond, this chapter focuses on the need for various health services for older adults, as well as the need for qualified practitioners to carry out these services.

The aging of the population has important implications for health care, public health, and human service systems. As the older segment of the population increases, more services will be required for the treatment and management of chronic and acute health conditions and disabilities. In addition, Medicare beneficiaries with multiple chronic conditions, especially the **frail elderly** with functional or cognitive impairments in addition to chronic disease, will need care coordination.[1]

According to projections from the U.S. Census Bureau, after the first Baby Boomers turned 65 years old in 2011, the number of older people substantially increased. In 2050, the age group 65 years and older is anticipated to be 83.7 million, twice as large as the 43.1 million in 2012, and will represent nearly 20% of the total U.S. population by 2030. The segment 85 years and older (the **"old-old"**) will also experience rapid growth from 5.9 million in 2012 to 18 million in 2050—about 20% of the total population. In recent years, the old-old have been the fastest-growing segment of the population. Furthermore, life expectancy at this advanced age is increasing. In contrast, the percentage of those 65 years and older is projected to grow at a much slower rate after 2030. Sixty-seven percent of this group was female in 2012; however, projections for 2050 are that the percentage of women will decrease to about 62%. Also, those over 65 years of age are projected to become more racially and ethnically diverse, with about 40% being non-white in 2050 compared to 20% non-white in 2012.[2]

COMMON HEALTH PROBLEMS IN AN AGING POPULATION

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 healthcare personnel. 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 older adults, especially the old-old, often experience multiple problems and require a substantial number of services.

Americans continue to live longer because of more effective diagnosis and treatment for heart disease and cancer, the two leading causes of death in those 65 years and older. As a consequence, the number of older Americans above both 65 and 85 years of age continues to increase. Common chronic diseases in older adults are arthritis, stroke, diabetes, chronic lower respiratory diseases, and dementia, including Alzheimer's disease. In addition, those with chronic diseases may have pre-existing health problems such as alcoholism or substance abuse, mental illness, or developmental disabilities.

In 2013, nearly half of those 75 years and older had two to three chronic conditions and 17% had four or more chronic conditions. Other losses associated with aging are loss of vision and hearing; for those over 75 years, 25% had a moderate hearing impairment and 18% were visually impaired. Quality of life and ability to perform complex and basic activities diminishes in the presence of one or more chronic diseases. In 2013, 32% of those 65 and older had difficulty performing complex activities, and 59% had difficulty performing basic activities.[3]

With aging, there may be a loss of ability to perform complex activities or **instrumental activities of daily living (IADLs)**. Examples are managing money, shopping, preparing meals, and taking prescribed medications. With further mental and physical decline, there is a loss of ability to carry out basic tasks or **activities of daily living (ADLs)** such as bathing, toileting, getting dressed, and self-feeding. Multiple health problems require different health specialists, a variety of treatment regimens, and different medications that may not be compatible. Case management is necessary to coordinate the care of older adults with multiple health problems. A combination of chronic disease and a loss of ability to complete complex and basic daily activities in older adults leads to the need for long-term care or support either from family members or professional caregivers.[4]

The most debilitating conditions producing functional impairment among older adults are stroke and dementia, with the most common cause of dementia being **Alzheimer's disease**.

Stroke ranks fourth among all causes for death after diseases of the heart, cancer, and chronic lower respiratory disease. Stroke is more common in women, African Americans, American Indians, and Native Alaskans and in those over 80 years old. It is also a leading cause of long-term disability, since a stroke can cause either left- or right-sided paralysis that impairs mobility and the ability to swallow and speak. Functional ability may improve with rehabilitation; however, permanent disability can cause a loss of independence and require long-term institutional care.[5]

Alzheimer's dementia is one of the most devastating diseases in older adults because there are no known treatments to prevent or slow progression of the disease. According to the Alzheimer's Association, one in nine people (11%) age 65 and older and one in three (33%) of those age 85 and older have the disease; and at the time of death, one in three

Americans will have been given the diagnosis of Alzheimer's disease. Women, African Americans, and Hispanics are more likely to develop the disease. Those diagnosed with the disease at age 65 can expect to live an additional 4 to 8 years; some live 20 years after the initial diagnosis, and most will require nursing home care. Among older adults 80 years of age and living in nursing homes, 75% will have Alzheimer's disease. However, family members often assume the responsibility to act as an unpaid **caregiver** for those with Alzheimer's disease. An estimated 15 million Americans serve as the primary caregiver for family members with dementia.[6]

Dementia is a decline in cognitive function that affects memory, language, and problem solving. Moderate decline impairs the ability to complete complex functions (IADLs) without assistance—for example, paying bills or managing medications. In contrast, someone with mild dementia would be able to carry out these complex functions, but with great effort. The early symptoms of Alzheimer's disease are difficulty remembering names or events. Later symptoms are disorientation and confusion, impaired communication, and poor judgment. In the later stages, symptoms are an inability to complete basic activities such as self-feeding; the last symptoms are difficulty in speaking, swallowing, and walking, requiring total bed care 24 hours a day.[6]

MEDICARE FOR OLDER ADULTS

The **Centers for Medicare and Medicaid Services (CMS)** administers the Medicare program. Medicare-covered benefits apply mostly to the treatment of patients with acute illnesses who require hospitalization and short-term skilled nursing care in rehabilitation centers or nursing homes, or home health care. Medicare is divided into four parts. All have deductibles and copayments.[7] Review **TABLE 4.1** for more detailed information about benefits and premium requirements.

Part A is hospital insurance, and all elderly beneficiaries are automatically enrolled. Part B is supplemental medical

TABLE 4.1 Medicare Programs for Those 65 Years of Age and Older or Under 65 and Disabled

Part A Hospital Insurance	Citizens and permanent residents are automatically eligible. Annual deductible. Covered benefits: • Inpatient hospital care • Skilled nursing facility care • Hospice care • Home health care
Part B Medical Insurance	Citizens and permanent residents are automatically eligible. Requires payment of monthly premium. Covered benefits at 80%: • Services from doctors and other providers • Outpatient care • Home health care • Durable medical equipment • Some preventive services Most beneficiaries purchase supplementary private insurance to cover the cost of copayments.
Part C Medicare Advantage	Optional. Requires payment of monthly premium (for Medicare part B). Medicare-approved private insurance managed care plan. Replaces benefits and services under Parts A, B, and usually part D. May include additional services such as dental or vision care.
Part D Prescription Drug Coverage	Optional. Requires payment of monthly premium (except for some Medicare Advantage plans). Covers the cost of prescription drugs.

Data from: Centers for Medicare & Medicaid Services. *Medicare & You 2016*. CMS Product no. 10050. September 2015. Internet: http://www.medicare.gov/Publications/Pubs/pdf/10050.pdf

insurance and is voluntary, although over 90% of older adults purchase Part B. Most older adults also purchase a **Medicare Supplemental Health Insurance** (often called Medigap insurance) from a private company to cover deductibles and copayments for Parts A and B. Part C is supplemental hospital and medical insurance, and Part D is medication insurance, and both are optional. Under Part A, Medicare pays for hospital expenses minus a deductible for the first 60 days of each benefit period. Part B pays 80% of the cost of the outpatient services of doctors, physical, occupational and speech therapy, diagnostic and laboratory tests, and durable medical equipment such as wheelchairs or oxygen tanks, as well as preventive screening for diabetes, cardiovascular disease, and cancer. Many older adults purchase Part C, also called **Medicare Advantage**, and Part D, Prescription Medications, from private insurance companies. Medicare Advantage Plans provide all of Part A (hospital insurance) and Part B (medical insurance) coverage, and may offer extra coverage such as vision, hearing, dental, and/or health and wellness programs. Most also include Part D, the Medicare prescription drug coverage. Medicare pays a fixed amount to the private insurance company offering Medicare Advantage Plans to cover the cost of Medicare Part B premiums and additional services.[7]

MEDICAID FOR OLDER ADULTS

Other than being administered by CMS, Medicaid and Medicare structures have little in common. Medicaid covers a broad range of services not covered by Medicare, acting as a supplemental insurance for older adults and the disabled. It also pays their Medicare premiums, includes cost-sharing requirements, and covers prescription drugs. However, a large number of older adults do not take advantage of Medicaid coverage because of the inability to navigate the publicly run system.

The Medicaid program is the primary payer and the only safety-net program for **long-term services and support (LTSS)**. Long-term care in a nursing home can cost $5,000 to $8,000 per month or $72,000 to $96,000 per year, and few families have unlimited funds to cover this cost. Under the **Medicaid spousal impoverishment provisions**, a certain amount of the couple's combined resources is protected for the spouse living in the community since the cost of paying for long-term care can rapidly deplete the lifetime savings of elderly couples. These provisions help ensure that this situation will not occur, and that spouses of individuals in nursing homes are able to live out their lives with independence and dignity.[8]

Even though Medicaid pays for the largest share of long-term services, beneficiaries must meet certain requirements, including having income and assets that do not exceed levels defined by the state of residence. Most states use a specific number of basic care (ADLs) and other service needs to qualify for nursing home or community-based services. Costs for long-term care vary depending on the services provided and the geographic location.[9]

LONG-TERM SERVICES AND SUPPORT (LTSS)

Long-term health care is defined as the help needed by people of any age who are unable to complete basic activities (ADLs) because of physical and/or mental impairment. As the term implies, this care is for extended periods, ranging from months to years to a lifetime. Long-term care is provided in institutions or the community, or it can be home-based.

Although 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. Frequently, no one is available to take care of the disabled or older adults who cannot manage the tasks of daily living. For some, community-based services are an alternative to institutional care, but for many others, such services are not enough. These individuals include the vast numbers of mentally ill, the intellectually and developmentally disabled, the frail elderly, and the permanently disabled.

Long-term care facilities funded by the federal government include more than just nursing homes. Institutional services refer to specific benefits authorized under the Social Security Act. These are **intermediate care facilities for people with intellectual disability (ICF/ID)**, inpatient psychiatric services for individuals under age 21, and services for individuals age 65 or older in an institution for mental disease. Another federal requirement is the **Preadmission Screening and Resident Review (PASRR)** designed to ensure that individuals are not inappropriately placed in a nursing home for long-term care. All applicants to a Medicaid-certified nursing home are required to be evaluated for mental illness and/or intellectual disability and be placed in the appropriate long-term care setting based on their needs.[10]

Intermediate Care Facilities for People with Intellectual Disability (ICF/ID)

ICFs are available only for individuals in need of, and receiving, active treatment which consists of a program of specialized and generic training, treatment, and health services. The emphasis in an ICF is on personal care and social services, and most attend workshops during the day. Independent clients who are able to function with little supervision and do not require a continuous program of habilitation services are not eligible for ICFs.[10]

Inpatient Psychiatric Services for Individuals Under Age 21

This program provides comprehensive mental health treatment for children and adolescents who, due to acute mental illness, substance abuse, or severe emotional disturbance, are

in need of treatment that can most effectively be provided in a residential treatment facility.[10]

Services for Individuals Age 65 or Older in an Institution for Mental Diseases

The services of an institution for mental diseases (IMD) meet federal and state requirements of a hospital or nursing facility, but are also considered an IMD for older adults with mental or intellectual disabilities who require ongoing long-term care.[10]

Nursing Facilities (NF)

Nursing facility services are provided by Medicaid-certified nursing homes, which primarily provide three types of services:

- *Skilled nursing* or medical care and related services
- *Rehabilitation* needed due to injury, disability, or illness
- *Long-term care*—health-related care and services (above the level of room and board) not available in the community, needed regularly due to a mental or physical condition

A **skilled nursing facility (SNF)** is a nursing home that provides the level of care closest to hospital care. Twenty-four-hour nursing services, medical supervision, rehabilitation, pharmacy and dietetic services, and physical, occupational, and recreational therapy are provided in accordance with federal guidelines. Medicare covers the cost of short-term skilled nursing and rehabilitation after surgery or disease, for example for hip replacement surgery or after a stroke. Long-term care is required for those requiring care 24 hours a day for assistance with ADLs. The cost of long-term care is funded either through private payment or by Medicaid for those who are eligible based on income and assets.[10]

Nursing homes originated with county poor houses (almshouses). They were first established in the 19th century to care for the poor and provide food, shelter, and clothing. Over time, they became community dumps for castoff unfortunates. The conditions in these places were atrocious. The mentally ill and developmentally disabled were once placed in nursing homes because there were few other options. However, this population did not need skilled nursing care or supervision 24 hours a day. Before Medicare and Medicaid were established in 1965, states were responsible for monitoring nursing homes. The poor conditions in the nursing homes prompted states to set up regulations governing nursing home care, but most states were unwilling to close the proprietary or voluntary nursing homes because they would then be responsible for the occupants. Instead, they chose to look the other way if conditions violated regulations.[11]

The **Omnibus Budget Reconciliation Act of 1987 (OBRA 87)** was enacted in response to concerns about the poor quality of care and inadequate regulation in nursing homes in the United States. A change brought about by OBRA 87 required Medicare and Medicaid standards and certification procedures regarding long-term care facilities to merge, and ICF/ID standards were upgraded to correspond to those for skilled care facilities.[12]

The federal government, through CMS, is responsible for nursing home standards, while individual states are responsible for monitoring facilities to ensure that standards are met. The OBRA 87 created minimum standards of care, including staffing requirements and rights for residents. These standards emphasized quality-of-life issues and the prevention of abuse, neglect, and mistreatment, including the use of physical and chemical restraints.[12]

COMMUNITY LONG-TERM SERVICES

Privately funded long-term care providers that are regulated by federal and/or state governments in addition to nursing homes include adult day care facilities, residential care communities, home health agencies, and hospice. The National Center for Health Statistics conducted the first portion of the National Study of Long-Term Care Providers in 2012. The source used for the providers was CMS. The survey will be conducted biennially and used for planning long-term care needs of the aging population.[13]

The 2012 survey results are shown in TABLE 4.2.

There were a total of 58,500 paid regulated long-term providers (facilities or agencies) that served about 8,357,100 people annually. The majority (65%) were residential care communities and nursing homes, and one-fifth were home health agencies. Both adult day care and hospice represented less than 10% each. The majority of the providers were for-profit except for adult day care, where the majority were nonprofit. Clients in adult day care and home health

TABLE 4.2 Long-Term Care Providers in the United States, 2012

Long-Term Care Services	Number	Percent
Residential care communities	22,200	38
Nursing homes	15,700	27
Home health agencies	12,200	21
Adult day care services	4,800	8
Hospice	3,700	6

Data from: Harris-Kojetin L, Sengupta M, Park-Lee E, Valverde R. Long-term Care Services in the United States: 2013 Overview. *National Health Care Statistics Reports*; no 1. Hyattsville, MD. National Center for Health Statistics. 2013.

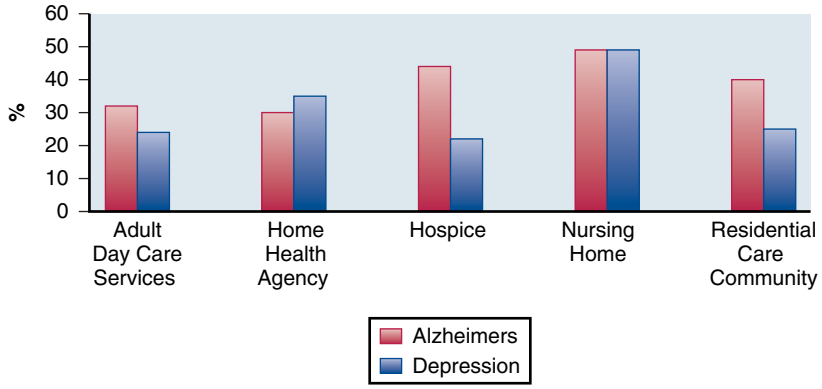


FIGURE 4.1 Users of long-term care with diagnosis of Alzheimer's or depression, 2011–2012.

Data from: Harris-Kojetin L, Sengupta M, Park-Lee E, Valverde R. Long-term Care Services in the United States: 2013 Overview. *National Health Care Statistics Reports*; no 1. Hyattsville, MD. National Center for Health Statistics. 2013

were younger than clients in other settings. Adult day care clients were also more racially diverse, with 20% Hispanic and 17% non-Hispanic black. The diagnosis of Alzheimer's and depression was highest in nursing home residents at 49% for each (FIGURE 4.1).[13]

An evaluation of the ADLs—bathing, dressing, toileting, and eating—were used to measure physical and cognitive function for users of long-term services. A need for assistance with bathing was most common (40% to 96%), while needing assistance with eating was least common (18% to 56%). Assistance with all ADLs was highest for residents in nursing homes, followed by clients of home health agencies. Clients of adult day care services needed less assistance with ADLs than all other long-term services, except for assistance with eating, which was lower for those living in residential care communities (FIGURE 4.2).[13]

Residential Care Communities/ Assisted-Living Facilities

Residential care communities or assisted-living facilities are nonmedical facilities that provide a room or apartment, meals, housekeeping, medication management, assistance with ADLs as needed, and recreational activities. Some also provide transportation for shopping or doctor visits. These facilities may be part of a retirement community, nursing home, senior housing complex, or a stand-alone facility. Licensing requirements vary by state, and the facilities are known by numerous different names, such as residential care, board and care, congregate care, supported care, sheltered care, and personal care. Financing arrangements include private pay or coverage through long-term care insurance. Some states cover the cost for low-income individuals who qualify through Medicaid waiver programs. These facilities are regulated by the states instead of the federal government and standards vary from state to state.[14] Some facilities are part of a retirement community, known as a **continuing care community**, that allow residents to move from independent living to assisted living to a skilled nursing facility on the same campus as their needs change. On any given day in 2012, there were 713,300 residents living in these communities. About one-half were 85 years and older, one-third were between 75 and 84 years of age, and 10% were 65 to 74 years of age. The remainder were under 65 years of age.[13]

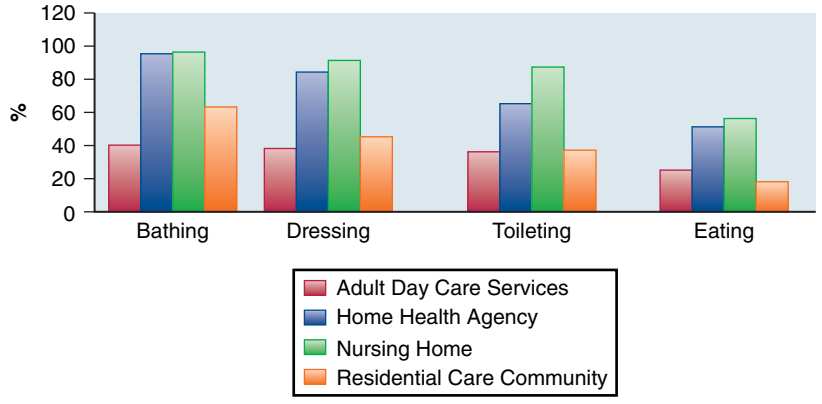


FIGURE 4.2 Users of long-term care needing assistance with ADLs, 2011–2012.

Data from: Harris-Kojetin L, Sengupta M, Park-Lee E, Valverde R. Long-term Care Services in the United States: 2013 Overview. *National Health Care Statistics Reports*; no 1. Hyattsville, MD. National Center for Health Statistics. 2013.

Home Health Agencies

"Aging in place" is a concept that is preferred by many older adults and their families. However, as their health declines, outside assistance is usually needed. Home health services are often ordered by a physician after a hip fracture or hip replacement. Others need ongoing assistance with ADLs or need supervision because of dementia. Health workers range from physicians and registered nurses to home health aides and homemakers. **Home health agencies (HHAs)** provide part-time nursing and medical 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 (FIGURE 4.3).

Homemaker services may also be part of the package. Physicians, physician assistants, and nurse practitioners provide medical care at home. Ongoing custodial or supportive care such as assistance with ADLs (bathing, dressing, eating) and IDLs (shopping, meal preparation, housekeeping) is provided by home health aides, homemakers, or personal assistants.[14]

FIGURE 4.3 Home health care services include physical therapy.
© Anneka/Shutterstock

The agency may be independently operated or managed by a public health department or hospital. Patient fees, government grants, private insurance, or Medicare and Medicaid may finance agency services. Variations of HHAs include the well-known Visiting Nurse Association, which most often employs U.S. Public Health Service nurses. These nurses go to patients' homes and change dressings, give injections, and request other types of services as needed.[15]

Hospice

In 1967, the hospice movement was resurrected from its beginnings during the medieval era in England. Whereas the first hospices cared for the wounded, sick, and dying, modern hospices care only for the dying. In 1986, the Medicare Hospice Benefit was made permanent by Congress, and states were given the option of including hospice in their Medicaid programs. In 2013, two-thirds of hospice patients received care at home, while 27% received care in an in-patient hospice unit and 17% received care in a nursing home; less than 10% received care either in a residential care facility or hospital.[16]

Hospices are operated on the principle that the dying have special needs 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. Other hospice services are emotional, psychological, and spiritual support for the patient and family and bereavement counseling for surviving family and friends. Medical care may include necessary medications, medical supplies, and equipment. Health professionals that work in hospice are physicians who serve as the medical directors, registered nurses, social workers, bereavement counselors, spiritual counselors, and personal assistants and home health aides. Hospice programs function as a multidisciplinary team.[16]

Adult Day Care Services

Adult day care services are provided in a community-based group setting, usually in a free-standing facility. Some centers may be affiliated with other health facilities or organizations including hospitals, nursing homes, residential care facilities, or senior centers. Adult day care is used to supplement home care services or as a less costly alternative to a residential care facility or a nursing care facility.[17] Adult day centers are usually open during the day, five days a week, to allow the family to continue to work or to offer a respite from caregiving. However, some centers may offer evening or weekend hours. Participants in adult day care centers usually require some supervision because of dementia or assistance with ADLs. Others receive therapeutic treatment to maintain physical or cognitive functioning. Social and recreational activities and meals and snacks are offered as well as some medical services. Most also include transportation services.[14] The majority of adult care centers employ registered nurses (59%), licensed practical nurses (45%), aides (74%), and social workers (43%).[13]

OTHER COMMUNITY PROGRAMS FOR OLDER ADULTS AND DISABLED PERSONS

Program of All-Inclusive Care for the Elderly (PACE)

The **Program of All-Inclusive Care for the Elderly (PACE)** is a form of integrated care supported by CMS, one of several programs that encourage states to provide the full array of Medicaid and Medicare benefits through a single delivery system in order to provide quality care for dual-eligible enrollees, improve care coordination, and reduce administrative burdens. PACE provides comprehensive preventive, primary, acute, and long-term care services so older individuals with chronic care needs can continue living in the community.[18]

The PACE model of care began in the 1970s in the Chinatown–North Beach area of San Francisco to meet the long-term care needs of elderly immigrants. By 2015, PACE had expanded to 116 sites in urban and rural areas in 32 states across the United States. Services include adult day care at a PACE Center, which has an on-site primary care provider—either a physician or nurse practitioner—and a multidisciplinary team of physical, occupational, and recreational therapists, including a dietitian, social worker, nurses, aides, and van drivers. Most participants attend the PACE Center three days a week, and transportation services are covered by the program. As needs change, participants may receive home, hospital, or nursing home care. PACE programs receive Medicare and Medicaid capitation payments.[19]

PACE is available to individuals 55 years of age or older who are certified by their state to need nursing home care but are able to live safely in the community. A typical PACE participant is very similar to the average nursing home resident: A woman, 80 years old, with 7.9 medical conditions, who is limited in three activities of daily living and has a 50% chance of having dementia. Even though PACE participants require high levels of care, more than 90% are able to continue living in the community.[20]

The Aging Network

The **Aging Network** is a system of federal, state, and local entities committed to supporting older Americans in living independently in their homes and communities. The Network consists of the **U.S. Administration on Aging (AOA)**, 56 state Aging units, 635 **Area Agencies on Aging (AAAs)**, and 256 Title VI Native American aging programs. The Network of agencies has successfully delivered aging services in communities across the U.S. for 42 years.[21] Most AAAs service rural areas (44%) or a mix of rural, urban, and suburban communities (28%).[22] AAAs were established as part of the **1973 Older Americans Act (OAA)** and Title VI.

Native American aging programs were added to the 1978 Amendment to the OAA. The federal government funds the Aging Network through individual states, which then distribute money to AAAs to fund direct services in local communities. Additional funding sources are general revenue from individual states, local funding and fundraising, Medicaid waivers, and consumer cost-sharing. The organizational structure of AAAs varies; local AAAs are part of city, county, or council governments or are independent nonprofit organizations.[22]

All AAAs offer five core services: nutrition, health and wellness, elder rights, caregiver support, and supportive services including transportation (**FIGURE 4.4**).[22]

Senior centers are the focal point where 60% of services are delivered. Most centers offer a noon meal as well as social, wellness, educational, and recreational programs Monday through Friday. Senior centers serve as referral centers for other services and offer public benefit counseling.[23] **BOX 4.1** demonstrates how a senior center delivers nutrition services.

Approximately 11,400 senior centers serve more than 1 million older adults every day. The majority of participants are women (70%); ethnicity is primarily Caucasians followed by African Americans, Latinos, and Asians, and the average age is 75 years. An estimated 75% of participants visit their Senior Center one to three times a week.[23]

Most local agencies also offer case management, information and referral, and counseling on health insurance benefits. AAAs were designed for vulnerable adults 60 years and older; however, many agencies now offer services to adults younger than 60 years who have disabilities and chronic disease, as well as to veterans.[22] The Aging Network continues to expand programming to serve consumers—for example, integration of acute care with home- and community-based care and chronic disease self-management. Local AAAs partner with other agencies to provide services.[21] Some of these partnerships and the percentage of AAAs with these partnerships are listed in **TABLE 4.3**.

DEMOGRAPHIC TRENDS AND PROJECTIONS

Changes in the racial and ethnic composition of the U.S. population have important consequences for the nation's health because many of the measures of disease and disability differ significantly by race and ethnicity. Shifts in the U.S. population are expected to occur, with a decrease in the percentage of whites and an increase in all other racial groups between 2012 and 2050. Racial and ethnic minority populations have increased from 17.5% of the older adult population in 2003 to 21.2% in 2013 and are projected to increase to 28.5% in 2030. Between 2013 and 2030, the white population aged 65 and older is projected to increase by 50% compared with 123% for older racial and ethnic minority populations, including Hispanics (153%), African-Americans (99%), American Indian and Native Alaskans (104%), and Asians (121%).[24] These shifts in the racial and ethnic makeup of the United States require health

FIGURE 4.4 Area Agency on Aging (AAA) programing includes health and wellness.
© Robert Kneschke/Shutterstock

BOX 4.1 AAA Profile: Nutrition

Chautauqua County Office for the Aging in Mayville, NY serves a rural area in western New York state. It provides services to 8,000 seniors, disabled adults, and caregivers each year. The aging office has close partnerships with three Meals on Wheels organizations and two hospital kitchens that serve meals at the Senior Center and to the home bound. The AAA is the central intake for all home-delivered meal requests and oversees congregate meals and home-delivered meals in the county. These partnerships are cost effective but also ensure that frail seniors and disabled adults have access to good nutrition essential for recovery after discharge from the hospital.

Source: Area Agencies on Aging. *Trends and New Directions. Area Agencies on Aging Survey 2014*. Internet: http://n4a.membershipsoftware.org/files/AAA%202014%Survey.pdf

professionals and organizations to achieve cultural competence and to ensure that they utilize appropriate and tailored approaches in working with these population groups. A **Healthy People 2020** recommendation is to increase the proportion of all degrees awarded to members of underrepresented racial and ethnic groups among the health professions to meet the needs of all patients, regardless of their background.[25]

Limited **health literacy** affects people of all ages, races, incomes, and education levels, but the impact of limited health literacy disproportionately affects lower socioeconomic and minority groups, those with low English proficiency, and older adults. Nearly one-third of adults in the United States have low literacy skills. The impact on the individual with low literacy skills includes more frequent medical errors, illness and

TABLE 4.3 Area Agency on Aging Partnerships, 2013

Partnership	Percent
Adult protective services	85
Transportation agencies	84
Medicaid agencies	83
Advocacy organizations	82
Hospitals	79
Emergency preparedness agencies	79
Mental health organizations	77
Disability service organizations	75
Public housing authority	75
Faith-based organizations	66
Community health providers	60
Businesses	46
Managed care/HMO networks	42

Data from: Area Agencies on Aging. *Trends and New Directions. Area Agencies on Aging Survey 2014*. Internet: http://n4a.membershipsoftware.org/files/AAA%202014%Survey.pdf

FIGURE 4.5 Health literacy is the ability to process and understand basic health information.
© Odua Images/Shutterstock

disability, and loss of wages. The impact on the larger economy is billions of dollars per year (**FIGURE 4.5**).[26]

Research over the past two decades has shown that health information is often presented in a way that is not usable to the majority of Americans. Health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions. Examples of health literacy are the ability to understand instructions on prescription drug bottles, appointment slips, medical education brochures, doctors' directions, and consent forms, and the ability to negotiate complex healthcare systems. Health literacy is not simply the ability to read. It requires a complex group of reading, listening, analytical, and decision-making skills, and the ability to apply these skills to health situations. It affects people's ability to search for and use health information, adopt healthy behaviors, and act on important public health alerts. Limited health literacy is also associated with worse health outcomes and higher costs.[27,28] For an example of how lack of health literacy impacts health delivery, review **BOX 4.2**.

BOX 4.2 Health Literacy Snapshot

An older Asian-American man cannot understand the dosage label on his medication. For fear of taking the wrong dosage, he does not take it at all. His back pain gets worse, and he is not able to go into work for a whole week. He recalls being rushed through his appointment and unable to understand the doctor's accent. He left without being able to ask any other staff for help as they seemed too busy.

Source: Mahadevan R. *Improving Oral Communication to Promote Health Literacy*. Fact Sheet #5. October 2013. Center for Health Care Strategies, Inc. Internet: http://www.chcs.org/media/Improving_Oral_Communication.pdf.[29]

PERSONNEL NEEDS

Requirements for personnel specifically prepared to serve older people will greatly exceed the current supply. Healthcare 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 healthcare personnel. Although attention to aging and **geriatrics** has expanded in recent years, most health education programs give little emphasis to these issues. Greatly expanded training programs are required to prepare personnel to provide services in homes, hospices, nursing homes, and other community settings.

Future Education for the Health Professions

Today's healthcare workforce lacks much of the training required to provide appropriate care to today's older adults and is thus unprepared for the projected increase in the number of older Americans over the next 25 years. Equally important, the healthcare workforce is older than in the past. The healthcare 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 older adult population. A second requisite is the need to assume an active role in developing acceptable health policies. Health professionals must be able to assess needs accurately and teach at all levels. Because healthcare providers will have to address new health issues, policies, technologies, and practice guidelines over the course of their careers, continuing education programs will need to be updated periodically.

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 allow students from many disciplines to interact and jointly provide care. Would-be healthcare professionals must learn to establish strong, effective, collegial relationships with practitioners of all healthcare disciplines. In this way, the student of today can prepare for a leadership role in clinical care, the political process, and national healthcare planning and research.

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. Healthcare providers will need to address new health issues, policies, technologies, and practice guidelines over the course of their careers.

Physicians direct the work of other health personnel, and therefore 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, and on the impact of sensory loss and dental health on nutritional status.

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

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

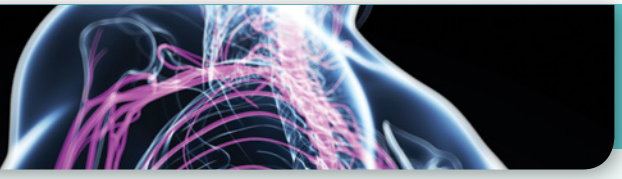
Often the care of older adults calls for multidisciplinary and interdisciplinary activities. Diverse competencies and skills are required to respond effectively to the challenge of caring for the aged population; the appropriate use of well-prepared allied health professionals and supporting health personnel will be critical to maintaining such a large elderly population at their optimum potential.

Health professionals need to be knowledgeable about the health problems of different ethnic, racial, and socioeconomic groups, including recent immigrants. Training in factors related to health literacy and approaches to simplify patient education are needed. Health literacy is critical in ensuring the delivery of quality health care and reducing hospital and emergency room admissions and healthcare costs.

Parts III, IV, and V of this book describes the work of many health professionals and supporting personnel in great detail. 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.

SUMMARY

The future of health services will be concentrated among older and very old persons. This fact has important implications for the education and training of all healthcare 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.



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Study Points

1. Demographic shifts are projected in the population, with 20% being over age 65 by 2030 and 20% being over age 85 by 2050. The population will also be more racially and ethnically diverse with non-whites being in the majority by 2043.
2. Those over 65 years old are likely to have one or more chronic diseases and need assistance in performing complex activities (IADLs) and basic activities of daily living (ADLs) such as bathing, toileting, dressing, and eating requiring the need for long-term care from family or professional caregivers.
3. The two most common health conditions that cause functional impairment requiring assistance with basic activities of daily living (ADLs) are stroke and Alzheimer's dementia.
4. Early symptoms of Alzheimer's disease are dementia or a loss of memory and problem-solving ability; in the later stages, there is a loss of ability to complete basic activities of daily living (ADLs) requiring total care 24 hours a day. An estimated 50% of nursing home residents have a diagnosis of Alzheimer's disease.
5. There are four parts to Medicare: Part A, hospital and short-term skilled nursing home care; Part B, outpatient, home, and hospice care; Part C, supplemental insurance that replaces Parts A and B; and Part D, medication insurance. All parts have deductibles and copayments.
6. Medicaid covers the costs of long-term care for those who are low income and disabled or older than 65 years and require assistance with basic activities (ADLs).
7. The federal government funds institutional care as specified by the Social Security Act; skilled nursing and rehabilitation; intermediate care for people with intellectual disability (ICF/ID); inpatient psychiatric services for individuals under age 21; and services for individuals age 65 or older in an institution for mental disease.
8. The Centers for Medicare and Medicaid (CMS) is responsible for nursing home standards while individual states are responsible for monitoring facilities to ensure that standards are met.
9. In 2013, two-thirds of those requiring long-term care services were residents of nursing homes or residential care communities and one-fifth received home health care. An additional 8% received either adult day care or hospice services.
10. Residents of nursing homes and those receiving home care usually require more assistance with ADLs than those using adult day care services or living in residential care communities.
11. Home health care provides both medical care and personal care after an acute illness or surgery plus medical, nursing, and therapy services; supportive care is ongoing custodial care or assistance with ADLs but does not include other professional services.
12. Hospice services manage pain and other symptoms of dying and emotional, psychological, and spiritual support for patients and their families and grief support for survivors.
13. Adult day care services supplement home care services or provide a less costly alternative to nursing home care.
14. The Program of All-Inclusive Care for the Elderly (PACE) coordinates Medicare and Medicaid services for dual eligibles 55 years and older who need nursing home care but who can live safely in the community with supportive services offered through PACE.
15. The Aging Network is a system of the U.S. Administration on Aging, 56 state aging units, 635 Area Agencies on Aging and 256 Title VI Native American aging programs that deliver services for those 60 years and older, veterans, and disabled persons under 60 years of age. The local senior center is the center for delivering services in nutrition, health and wellness, elder rights, caregiver support, transportation, and referrals for other services.
16. Health literacy is the ability to obtain, process, and understand basic health information and services needed to make appropriate health decisions; those more likely to have low health literacy are of lower socioeconomic status, those with low English proficiency, and older adults.
17. Based on projected demographics indicating greater diversity in ethnic and racial diversity and greater numbers older than age 65, future health professionals will need to be knowledgeable about cultural differences and the health conditions and needs of older adults.

Issues for Discussion

1. View the video, *Long-Term Care: Does Health Insurance Cover It?* Then go to your state Medicaid site to determine what long-term services are covered by your state Medicaid program. What are the income requirements for eligibility for someone over age 65 needing assistance

LEARNING PORTFOLIO

with ADLs in your state? (Internet: https://www.youtube.com/watch?v=Livh4CoWvlM&app=desktop)

2. Use the interactive tool to estimate the cost of various long-term services such as homemaker services, adult day health care, assisted living facility or nursing home for the state in which you live (Internet: http://longtermcare.gov/costs-how-to-pay/costs-of-care-in-your-state/).
    - What are the costs of care in your state?
    - Which service costs the least?
    - Which service costs the most?
3. View the video, *The Voices of Adult Day Services*, from the Adult Day Services Association (Internet: http://nadsa.org/wp-content/themes/nadsa/popups/video1.txt). What are the advantages of adult day services as a choice for long-term care for those with physical or mental disabilities?

Enrichment Activities

1. Go to the National Council on Aging website and link to Benefits Access Visualization tools. Review the information for the state where you live for dental, vision, and hearing benefits. What services are available for dental care for low-income seniors on Medicare without supplemental health insurance?
2. Go to the website Center for Health Care Strategies and review fact sheets on health literacy. Choose one of the six Fact Sheets and provide two to three tips that you would use as a student in the health professionals to provide improved communication with clients who may have low literacy skills (Internet: http://www.chcs.org/resource/health-literacy-fact-sheets/).

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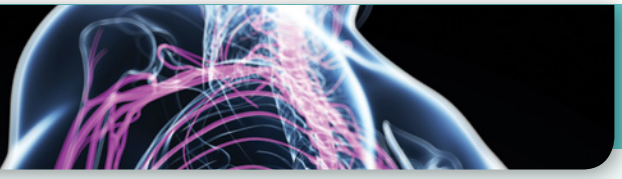

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AFFORDABLE CARE ACT

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CHAPTER 5

Health Care Reform

Objectives

After studying this chapter, the student should be able to:

- Summarize the process of applying for health insurance through the HealthCare.gov website.
- Describe the impact of the Affordable Care Act (ACA) on insurance coverage and access to care.
- Explain modifications in the Affordable Care Act (ACA) of 2010 as a result of the U.S. Supreme Court decisions on the expansion of Medicaid and contraceptive coverage.
- Compare insurance coverage and access to care in states with and without expanded Medicaid.
- Discuss changes in healthcare costs since 2010 when the ACA was passed into law.

Key terms

Accountable care organizations (ACOs)
Advance premium tax credit
Affordable Care Act (ACA)
Center for Medicare and Medicaid Innovation
Clinical preventive services
Closely held corporations
Cost sharing reduction plan
Data Service Hub
Diagnosis-related group
Employer shared responsibility program
Essential health benefits
Exchange planning grants
Federally-Facilitated Marketplace (FFM)
Federal poverty level (FPL)
Federally qualified health center (FQHC)
Fee-for-service
Gross domestic product (GDP)
Health Care and Education Reconciliation Act of 2010
HealthCare.gov
Health Exchange (Marketplace)
Hobby Lobby v. Burwell
Hospital Readmission Reduction Program (HRRP)
King v. Burwell
Medicaid expansion
Medical Advantage Plans
Medicare Shared Savings Program
Minimum essential coverage
National Federation of Independent Business v. Sebelius
National health expenditures (NHE)
National Health Services Corps (NHSC)
Navigator
ObamaCare
Payment reform
Qualified health plans (QHP)
Religious Freedom Restoration Act of 1993 (RFRA)
Small Business Health Options Program (SHOP)
State-Based Marketplace (SBM)
Uncompensated care

OVERVIEW OF HEALTHCARE REFORM

Three goals of the **Affordable Care Act (ACA)** of 2010 were to decrease the number of uninsured, increase the quality and efficiency of health care, and slow the rising costs of health care. Have these goals been achieved? Are there now more Americans covered by health insurance than before 2010 when the ACA was passed? Are health insurance premiums affordable? Have healthcare costs decreased? This chapter will report the current state of the ACA and the impact of the law on the numbers of people who currently have access to health care through Medicaid and the Health Exchanges. A review of important changes in the ACA as modified as a result of Supreme Court decisions will also be included. The federal government monitors insurance enrollment numbers and federal dollars spent for health care. Updates are ongoing although the trends reported in this chapter are expected to continue.

Concerns about rising healthcare costs and the large numbers of uninsured Americans led to passage of the ACA. In 2010, the average cost of health care was $8,402 per person and the total costs were $2.6 trillion or 17.9% of the **gross domestic product (GDP)**, an increase from 7.2% in 1970.[1] Although the cost of implementing ACA was expected to be high during the early implementation phase, the Centers for Medicare and Medicaid (CMS) estimated the provisions of the law would slow the rate of growth in healthcare spending over time. Initially some of the approaches to lower healthcare spending were to reduce payments to **Medicare Advantage Plans** and reduce payments to hospitals for Medicare patients. For the long term, a new **Center for Medicare and Medicaid Innovation** was established to evaluate models in healthcare delivery and care coordination especially for dual eligibles—individuals on both Medicare and Medicaid. Treatments and services with the best health outcomes and greatest cost savings are used to make decisions for future healthcare delivery.[1]

President Barack Obama signed healthcare reform legislation into law in March 2010. The Patient Protection and Affordable Care Act (H.R. 3590) was modified by the **Health Care and Education Reconciliation Act of 2010** (H.R. 4872); the two are collectively called the Affordable Care Act and were signed into law by President Obama.[2] A more commonly used term is **ObamaCare**, named for the president. The ACA is very complex and requires many entities to implement: the federal government, state governments, private insurance companies, and healthcare providers, including healthcare professionals and healthcare institutions—hospitals and outpatient clinics.

As a result of the ACA, an estimated 15 million individuals obtained health coverage from the beginning of the first enrollment period in October 2013 through March 2015, resulting in a drop in the percentage of uninsured Americans to 10% from 17%.[3] In addition, 12 million low-income adults and children enrolled in Medicaid or the Children's Health Insurance Program (CHIP) between October 2013 and April 2015, increasing the total number on these programs to 71 million (FIGURE 5.1).[4] The majority of the newly insured were Latinos as well as low- and middle-income adults who lived in states that expanded Medicaid. The number of uninsured dropped from 28% to 18% in adults between 19 and 34 years of age.[5] Some 3 million adults younger than 26 years of age obtained health insurance as a result of the ACA allowing young adults to remain on their parents' health insurance policy until age 26. For young adults, the greatest gain in coverage was for nonstudents and unmarried men.[5,6]

FIGURE 5.1 As a result of the Affordable Care Act, low-income adults and children were able to enroll in either Medicaid or the Children's Health Insurance Program.

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With the passage of the ACA, individuals had more options for obtaining health insurance (TABLE 5.1). The source of health insurance continued to be the employer for the majority of Americans and the self-employed could continue to purchase a health plan from a private carrier. As a result of ACA young adults were able to remain on their parents' health plan until age 26 beginning in 2010.[7]

Part-time and self-employed workers and those buying insurance from non-group plans were able to purchase insurance through a **Health Exchange** (also known as the **Marketplace**) established by individual states or the federal government. States had the option to establish their own **State-Based Marketplace (SBM)**, default to a **Federally Facilitated Marketplace (FFM)**, or operate in partnership with the federal government **(FFM-P)**. **HealthCare.gov** was established as a one-stop shopping site for purchasing a non-group health plan as well as determining eligibility for Medicaid and the Children's Health Insurance Program (CHIP) (FIGURE 5.2). In addition, the site provides resources for small businesses to offer insurance to their employees through the **Small Business Health Options Program (SHOP)**.[7] The HealthCare.gov site links to websites of individual states with a State-Based Marketplace.

The U.S. Department of Health and Human Services awarded seven cooperative agreements in 2011 to help a group of "Early Innovator" states design and implement the

TABLE 5.1 Mechanisms for Obtaining Health Insurance Coverage after the Affordable Care Act (ACA)

Mechanism	Description
Employer	Most large companies offer health benefits, the same as before ACA. For New small-business markets, Small Business Health Options Program (SHOP) offers insurance for businesses with up to 100 employees.
Direct Enrollment	Consumers buy coverage directly from private insurers with new consumer protections.
Parents	Young adults can remain on their parents' health plan until age 26.
Marketplace	Consumers shop for private plans with different cost sharing through a State-Based Marketplace or the Federally Facilitated Marketplace. Based on income, consumers can also apply for Medicaid or the Children's Health Insurance Program (CHIP).
Medicaid	Medicaid coverage expanded in 31 states and Washington, DC.

Data from: Modified from Blumenthal D, Collins SR. Health Care Coverage under the Affordable Care Act—A Progress Report. *N Engl J Med*. 2014; 37:275–281.

Information Technology (IT) infrastructure needed to operate Health Insurance Exchanges. These Early Innovator states were challenged with developing Exchange IT models that could then be adopted and tailored by other states.[8] All marketplaces were required to have **navigators**, individuals employed and trained to assist consumers in selecting and enrolling in a **qualified health plan (QHP)** offered through either a SBM or FFM (Figure 5.2). The federal government provided start-up funds to establish IT for FFM and SBM and for outreach and marketing at the state level to reach individuals eligible for obtaining health insurance through the Marketplace.[9]

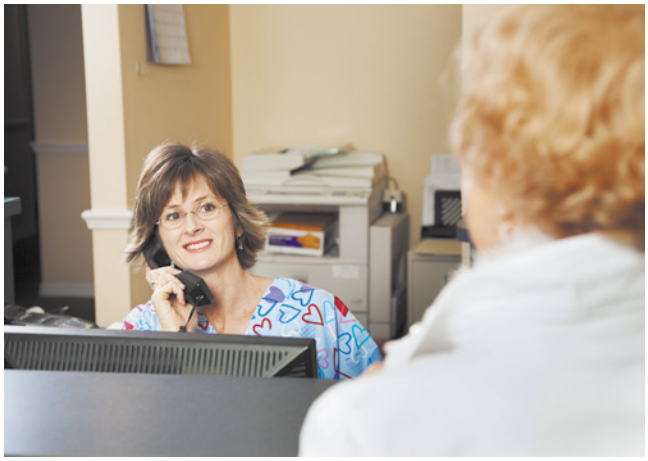

FIGURE 5.2 Navigators work for Health Exchanges to assist consumers in selecting and enrolling in health plans.
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TIMELINE FOR IMPLEMENTING THE ACA

Parts of the ACA started in 2010 and each successive year additional parts of the ACA were implemented with all parts of the ACA to be completed by 2018 (**TABLE 5.2**).[10] Different parts addressed the two major goals of the ACA: (1) to increase access to health care for more Americans, and (2) to control healthcare costs while improving the quality of healthcare delivery.

Increasing Access to Health Care

Americans with pre-existing diseases previously denied health insurance were eligible for health insurance in the first year of implementation. For example, those with the pre-existing diagnoses of diabetes or heart disease were often denied health insurance before ACA (**FIGURE 5.3**).

Other ways that access to health care was expanded were: (1) allowing young adults to remain on their parents' health plan; (2) expansion of the primary care workforce—physicians, nurse practitioners, and physician assistants—through scholarships and loan repayment programs; and (3) expanding the **federally qualified health centers (FQHC)**. The most important parts of the law started January 1, 2014, when health insurance coverage became effective for those purchasing insurance through the Marketplace. Many Americans were able to purchase health insurance for the first time through the Health Exchanges with federal subsidies to pay part of the premium. Another source of health coverage for low-income Americans was **Medicaid expansion** for those living in states that expanded Medicaid.[10]

Controlling Cost while Improving the Quality of Health Care

Requiring **essential health benefits** in all health plans ensured the same benefits for all Americans regardless of the source of insurance coverage. All health plans, both private and government-sponsored plans—Medicaid and state and federal Exchanges—were required to include essential health benefits (**TABLE 5.3**) beginning in 2014. **Clinical preventive services**—contraceptive services, cancer screening and immunizations—were also required as a part of all health policies obtained through the Health Exchanges, Medicare, and Medicaid. Preventive services are less costly than treating a serious disease; for example, cancer diagnosed in the early stages is easier and less costly to treat than cancer that has spread throughout the body.[10]

TABLE 5.2 Timeline for Implementing the Affordable Care Act

Year	
2010	• Adult children under 26 years of age are covered by parents' health insurance policy. • **Pre-existing conditions** could no longer be used to exclude applicants from obtaining health insurance (for example, those with type 1 diabetes are able to obtain health insurance when changing jobs and insurance policies). • **Clinical preventive services** were required by all health insurance policies: for example, contraceptives, immunizations, and cancer screening. • **Scholarship and loan repayment** program for student training: physicians, nurses, and physician assistants. • **Federally qualified health centers** were expanded.
2011	• **Limits on non-medical spending** by private health insurance plans to 15% of the cost of health insurance premiums. • **The Center for Medicare and Medicaid Innovation** was established to reward hospitals and physicians for quality instead of volume of services. • **Pharmaceutical fees** levied on drug manufacturers.
2012	• **Hospital Readmission Reduction Program**: lowered Medicare payments to hospitals failing to meet the standard for readmission for three diagnoses: heart attack, stroke, and pneumonia.
2013	• **Electronic health records** required by private health insurers. • **Payment reform**: pilot programs that bundle services; for example, home care after surgery.
2014	• **Health Exchanges** established by individual states and the federal government for individuals with incomes between 100% and 400% of the **federal poverty level (FPL)**. • **Medicaid expansion** for individuals with incomes at 138% of the FPL living in states that chose to expand Medicaid. • **Essential health benefits** required by all health insurance policies sold through Health Exchanges. • **Shared responsibility for coverage**: Individuals must have health insurance or pay a penalty; employers with at least 100 employees must offer health insurance to employees.

Data from: *Key Features of the Affordable Care Act by Year*. U.S. Department of Health and Human Services. Accessed on May 11, 2014.[10]

Programs were established by the Centers for Medicare and Medicaid (CMS) to control costs while improving the quality of health care. The ACA included incentives for healthcare providers—hospitals, clinics, and physicians—to improve outcomes; for example, lower hospital readmissions and lower costs. Accountable care organizations were rewarded for lowering healthcare costs and providing quality care. The Hospital Readmission Reduction Program used incentives for hospitals to avoid readmission rates for heart attack, heart failure, and pneumonia. Hospitals with high readmission rates received lower reimbursement for Medicare patients. New **payment reforms** such as bundling payments for surgery and follow-up home health care were implemented.[10]

FIGURE 5.3 The Affordable Care Act removed restrictions for those with pre-existing diseases such as diabetes from purchasing health insurance.

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TABLE 5.3 Essential Health Benefits Required by All Qualified Health Plans

Ambulatory patient services
Emergency services
Hospitalization
Maternity and newborn care
Mental health and substance use disorder services including behavioral health treatment
Prescription drugs
Rehabilitative services and devices
Laboratory services
Preventive and wellness services and chronic disease management
Pediatric services, including oral and vision care

Data from: U.S. Department of Health and Human Services. *Key Features of the Affordable Care Act by Year*.

CHALLENGES TO LAUNCHING THE AFFORDABLE CARE ACT

Enrollment for the uninsured got off to a rocky start in fall 2013 for three reasons.[11] First, the FFM website (HealthCare.gov) and the SBM were unable to handle the demand for the number of individuals attempting to sign up for health insurance, and many were unable to access the websites. Common problems enrolling through the FFM as well as SBM were related to issues with IT systems, leading to long waits in application verification and eligibility determinations and wrong or missing information being submitted to health plans by individual enrollees.[11] The Exchange IT systems were intended to be streamlined, simple, and coordinated to determine eligibility and enroll consumers in all health subsidy programs and to be integrated with state Medicaid programs to allow consumers to switch from private insurance to Medicaid and CHIP with changes in eligibility status, for example job changes or marriage. In addition, the process was designed to allow individuals to enroll online, by mail or telephone, or in person. The ACA created the federal **Data Service Hub** to connect the Marketplace with Medicaid and CHIP and common federal data sources (Homeland Security, Social Security Administration, and the Internal Revenue Service) for easy electronic verification of income, immigration, and citizenship status.[12] However, there were several sources of breakdown in the system, as shown by the red burst symbol (FIGURE 5.4).

A second challenge to the rollout was the Supreme Court change to the ACA that allowed individual states to opt out of Medicaid expansion, which resulted in lower enrollments by low-income adults in states that chose not to expand Medicaid. A third problem was that many individuals who had been enrolled in individual plans before the ACA were not able to keep their insurance plans due to the plans not meeting the minimum coverage standards required under the new law. President Obama had promised that no one would be required to change their plan, saying, "If you like your healthcare plan, you'll be able to keep your healthcare plan, period. No one will take it away, no matter what." However, the standards put into place by the law meant that many existing insurance plans had to be withdrawn by the policy issuers, and therefore were no longer available after implementation of the ACA—a situation that angered many people.[11]

SUPREME COURT DECISIONS AND CHANGES TO THE ACA

Minimum Essential Coverage and Expansion of Medicaid by States

The two most unpopular parts of the ACA were the requirement for individuals without access to employer-covered insurance to purchase insurance through the Marketplace and for states to expand Medicaid. Beginning in 2014, all

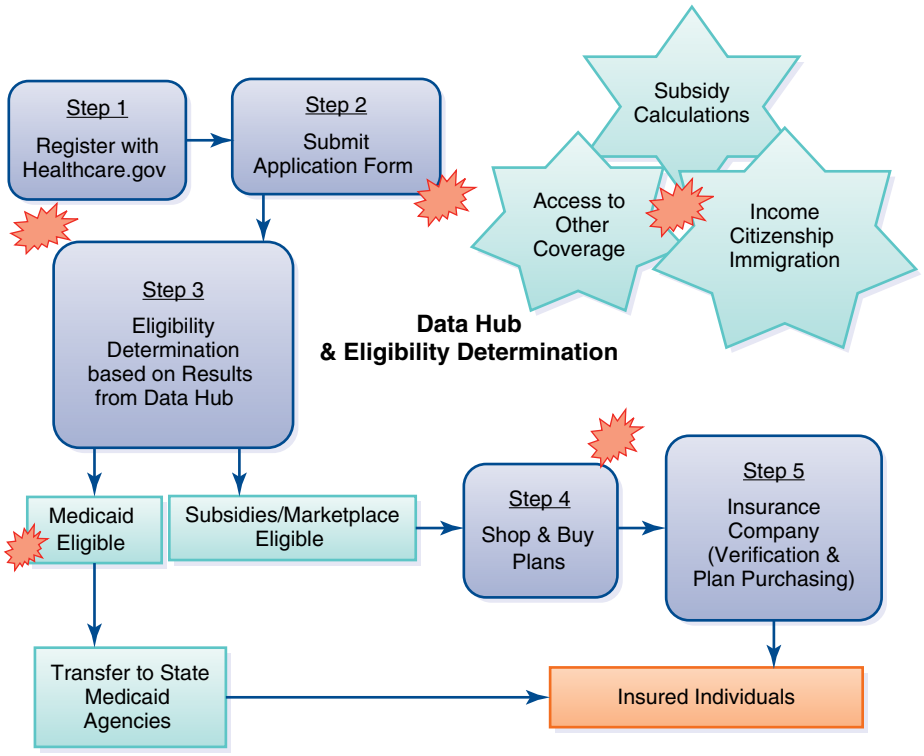


FIGURE 5.4 Federally Facilitated Marketplace eligibility and enrollment.

Data from: Courtot B, Coughlin TA, Upadhayay DK. *The Launch of the Affordable Care Act in Selected States: Building ACA-Compliant Eligibility and Enrollment Systems. ACA Implementation–Monitoring and Tracking.* The Urban Institute. March 2014.

American citizens and permanent residents were required to have **minimum essential coverage** or pay a tax penalty.[13] However, not everyone is required to purchase health insurance. Many Americans have access to health insurance through an employer-sponsored group plan or government-sponsored programs (Medicare, Medicaid, CHIP, Indian Health Service, the Veterans Administration, or the U.S. Department of Defense). Others exempt from having insurance are undocumented immigrants and the incarcerated. The IRS website provides more detailed information about individuals that may be exempt from purchasing insurance; the IRS also monitors compliance to minimum essential coverage.[13]

The ACA of 2010 required all states to expand Medicaid to non-pregnant adults less than 65 years of age with incomes 138% of the **federal poverty level** (**FPL**). Medicaid coverage before the ACA varied by states and most did not cover adults without children. The ACA stipulated that the federal government fund 100% of the cost of Medicaid expansion for years 2014, 2015, and 2016 with a gradual decrease in funding to 90% in 2020 and thereafter. Even with the federal government covering much of the cost of Medicaid expansion, many states were reluctant to add the costs to struggling state budgets. As originally written, the ACA stipulated that if a state failed to comply with the requirement to expand Medicaid, the state could lose all federal Medicaid funding.[2]

Because of the unpopularity of the ACA, a lawsuit was filed in Federal District Court in 2011 to challenge the constitutionality of both the individual mandate and Medicaid expansion by the National Federation of Independent Business, 26 states, and several individuals (**National Federation of Independent Business v. Sebelius**). The Federal District Court upheld Medicaid expansion but not the individual mandate. When the case was brought to the Supreme Court in 2012, however, the individual mandate was upheld, but Medicaid expansion was ruled to be a violation of the Constitution, since states were threatened with loss of their existing Medicaid funding (an estimated 10% of state budgets) for failing to comply with the expansion. Therefore, the Supreme Court ruled that expansion of Medicaid by individual states was optional.[14]

Contraceptive Coverage

The ACA requires that all health insurance policies cover women's preventive health services including Food and Drug Administration- (FDA-) approved prescription contraceptives and counseling on birth control methods. However, some employers with religious objections to contraceptives challenged this requirement. Women had contraceptive coverage if they had insurance through an employer that did not object to contraceptives based on religious grounds. Women who worked for nonprofit healthcare institutions or universities affiliated with religious organizations that objected to contraceptives usually had access to contraceptives; however, the employer was not required to pay for the coverage. Instead, women could obtain coverage directly through their insurance plans.[15]

The Supreme Court heard two cases with conflicting outcomes in lower courts involving for-profit employers that were opposed to contraceptive coverage on the grounds that requiring coverage interfered with religious freedom under the **Religious Freedom Restoration Act of 1993 (RFRA)**. The two employers were Hobby Lobby, a chain of craft stores owned by a Christian family, and Conestoga Wood Specialties, a manufacturer of wooden cabinets owned by Mennonites, also Christians. The lower courts ruled in favor of Hobby Lobby but not Conestoga Wood Specialties. On June 30, 2014, The Supreme Court in **Hobby Lobby v. Burwell** ruled in favor of Hobby Lobby and Conestoga, both **closely held corporations** (50% or more of ownership held by a small number of family members) on grounds that requiring coverage of contraceptive drugs or devices would violate their religion beliefs. As a result of this ruling, female employees had no or limited coverage for contraceptives depending on the religious beliefs of their employer. Houses of worship are exempt from providing contraceptive coverage. Religiously affiliated employers or for-profit closely held corporations are required to request an accommodation—the insurance provider must pay for contraceptive coverage for female employees (instead of the employer). Mandatory contraceptive coverage for female employees applies to all other employers. An employer that qualifies for an accommodation must submit an application through the insurance provider or write a letter to the Secretary of Health and Human Services to request an accommodation.[16]

Premium Subsidies for Purchasing Health Insurance in the Marketplace

The ACA's premium subsidies allow consumers to purchase affordable health insurance through **An advance premium tax credit** for those with incomes between 100%–400% of the federal poverty level (FPL) or **cost sharing reduction** for those with incomes between 100%–250% FPL. Employers with 50 or more employees are required to provide health insurance for employees. A fine or the **employer shared responsibility payment** is triggered if a full-time employee is receiving a Marketplace premium subsidy since the employer is required to provide health insurance for employees. In implementing this regulation the interpretation of the Internal Revenue Service (IRS) was that purchasing premium subsidies through any Marketplace—SBM, FFM, or FFM-P—ensures eligibility for tax credit.[17] However, the IRS ruling was challenged in the federal courts based on the wording of the ACA that specified that the Marketplace be established by the *state*. Lawsuits brought to federal appeals court disputed both the ACA language about Marketplace premium subsidies and the authority of the IRS to

grant premium subsidies for those who purchased plans through the FFM. Because of the conflicting rulings on premium subsidies the case moved to the Supreme Court to be resolved. In **King v. Burwell**, the Supreme Court ruled in favor of the U.S. government on June 25, 2015, allowing an estimated 6.4 million Americans who had purchased health plans through the federal marketplace to continue to receive premium subsidies.[18]

ACCESS TO HEALTH CARE VARIES BY STATE

As of January 2016, Medicaid expansion had been implemented in 32 states and Washington, DC, with three additional states considering expanding Medicaid—South Dakota, Wyoming, and Virginia—and 16 states that were not expected to expand Medicaid.[19] In states that did not expand Medicaid, an estimated 10% of the population were not able to obtain government-sponsored health care because of income guidelines for both Medicaid and premium subsidies for those purchasing health insurance through Health Exchanges. Those who fell into the coverage gap had incomes that were too high to qualify for Medicaid and too low to qualify for premium subsidies through the Marketplace.[20] Such individuals could apply for an exemption to the tax penalty, but this does not enable them to obtain low-cost insurance—leaving them with no coverage at all.[21]

Those living in states that expanded Medicaid were more likely to have health insurance coverage than those living in states that chose not to expand Medicaid. The uninsured rate fell from 28% to 17% for adults with incomes less than 100% of the FPL in Medicaid-expanding states but the rate remained unchanged—36%—in non-expanding states. There was a similar pattern for Latinos, the ethnic group most likely to be uninsured in the United States. The uninsured rate for Latinos fell from 35% to 17% in states that expanded Medicaid but remained unchanged at 33% for the non-expanding states. California has the highest number of Latinos of all states, and because the state expanded Medicaid, about 50% of formerly uninsured California Latinos were insured in 2014. California was the first state to pass legislation to establish a Marketplace and used aggressive marketing to encourage enrollment. The largest number of uninsured Latinos after open enrollment lived in two states that didn't expand Medicaid—Texas and Florida. In addition, an estimated 16% of all Latinos in the United States are not eligible for health coverage because of their immigration status.[22]

The ACA could cause an unintended disparity in healthcare coverage and access, especially in the South where many states chose to not expand Medicaid. One-third of the U.S. population live in the South, and nearly half of Southerners live in three states—Texas, Florida, and Georgia, none of which expanded Medicaid.[19] Southerners are also more likely to be uninsured than those living in the Midwest or Northeast primarily because of the type of work available in blue-collar industries and small businesses. Employers in these settings typically don't offer health coverage, and private insurance is unaffordable. Although Medicaid expansion in the South would increase health coverage, 11 states in the South opted out of expansion. Only the Southern states on the border close to the Midwest and Northeast expanded Medicaid—Arkansas, West Virginia, Kentucky, Delaware, and Maryland, as well as Washington DC. As a result of the ACA, 3.5 million Southerners obtained health coverage through the Marketplace; however, 4 million remained ineligible for either Medicaid or premium subsidies through the Marketplace.[23]

The cost of health insurance premiums during the first year of the ACA varied within states and across the United States. Plans offered a choice at the bronze, silver, gold, and platinum levels and the cost of the premium varied by plan. At the lowest bronze level, the cost of the premiums was low, but cost-sharing (deductibles and copays) was high, while at the highest platinum level, the premiums were high but the cost-sharing was low (lower deductibles and lower copays). For example, at the bronze level, the individual would pay 60% of the cost of medical services and the insurance would cover 40%, compared to the platinum level in which the individual would pay 10% and the insurance covered 90% of the cost of health care. The cost of premiums was 3% to 4% of incomes for consumers with incomes at 133% to 150% of the FPL. Subsidies from the federal government paid the remaining cost of the premiums.[17]

Premium costs are related to local labor costs and market competition in the insurance industry and among providers—hospitals and physicians. In 2014, the cost of premiums was higher in the low-competition states of Alabama, Arkansas, Rhode Island, and West Virginia, where few plans were offered in the Marketplace. Alabama had only one insurance carrier. When more plans were available in the Marketplace the cost of the premiums were lower; for example, in the Denver area, there were eight carriers and the premiums were lower than in rural Southeast Colorado, where there were only five carriers. The more competitive prices were in urban areas of six states: Colorado, Maryland, Massachusetts, New York, Oregon, and Virginia where monthly premiums for a 45-year-old ranged from $219 per month in Oregon to $359 in New York City. This compares with a range between $288 in Birmingham, Alabama to $331 in Little Rock, Arkansas.[24] Although average yearly costs of premiums for small businesses with fewer than 100 employees increased by double digits for about half of the states between 2000 and 2013, the average increase in premiums in the U.S. had been 3% to 7% per year during this period.[25]

THE IMPACT OF THE ACA ON HEALTHCARE COST

It is too soon to do a cost analysis of the ACA. However, this section will highlight sources of start-up and ongoing costs as well as cost savings from new ACA programs.

Sources of Costs to Implement the ACA

Costs to implement the ACA included establishing an IT system as part of setting up exchanges and hiring navigators to help consumers select and enroll in a health plan. **Exchange planning grants** were available for each state beginning in 2011 to set up Exchanges.[9] Additional funds were used to staff the FQHC to provide enrollment assistance for consumers seeking a health plan. The ACA also allotted money for expanding the capacity of FQHCs to meet the primary healthcare needs of individuals newly enrolled in Medicaid. The **National Health Service Corps (NHSC)** funding increased from 2011 through 2015 to ensure that enough primary care health workers were available to care for the newly insured. Additional money was allotted for scholarships and loan repayment programs for doctors, nurses, and other healthcare professionals during training in exchange for working in underserved areas after graduation.[26] The federal government funded expansion of Medicaid by the states through 2016 as well as premium subsidies for those enrolling in health insurance through the Marketplace.

Indicators of Healthcare Costs

One indicator of healthcare costs is the **national health expenditure (NHE)**, which slowed between 2010 and 2014 with an average annual rate of 3.8%, the lowest since tracking began in 1960.[27] In October 2014 the Congressional Budget Office (CBO) projected that the NHE would be less during 2014 to 2019 than had been projected in 2010 before the ACA was implemented. Expenditure projections in October 2014 for Medicare, Medicaid, and private health insurance were billions of dollars less than projections made in 2010.[28]

The slowing of NHE is no doubt related to the recession beginning in 2007; however, the trend started before the recession and has continued. A key contributor to NHE is hospital prices, which slowed to a low of 2% in 2013.[27] Other suggestions for lower NHE are (1) greater cost-sharing by the consumer, with higher deductibles and copays for hospitalizations and physician visits; (2) narrower networks in private insurance plans; (3) a slowing in the use of expensive medical technology, for example, MRIs and CT scans and greater use of low-cost generic drugs; and (4) shifting healthcare coverage to lower cost Medicaid programs from employer-sponsored programs.[28] ACA policies that may have also reduced the NHE are lower Medicare reimbursement for providers, hospitals, and nursing homes as well as quality improvement programs such as the **Hospital Readmission Reduction Program (HRRP)** and **Accountable care organizations (ACOs)**, discussed later in this section.[28]

Another indicator of healthcare cost is **uncompensated care**—also described as charity care—non-reimbursed care for the uninsured or underinsured. Estimates are that uncompensated care costs were lowered by $5.7 billion in 2014 with $4.2 billion savings coming from Medicaid expansion states and $1.5 billion coming from non-expansion states. Reduction in costs came primarily from fewer uncompensated hospital admissions and emergency room visits because the newly insured were able to obtain health care from a primary provider, which costs much less than going to the emergency room.[29] The estimated cost for each uninsured individual in 2013 was $1,005, and a total of $49 billion was spent for all uncompensated care in the U.S.[30] Data analysis from eight states that expanded Medicaid reported a savings by replacing state general funds with federal funds received by expanding Medicaid. These states reported a drop in uncompensated hospital care.[30]

Programs to Control Healthcare Costs

A program established by the ACA, the HRRP, includes incentives for healthcare providers to improve the quality and efficiency of health care. CMS data showed that one in five Medicare patients receiving hospital care was being readmitted within 30 days of discharge, at an estimated cost of $26 million.[32] Under the HRRP, the amount of money that hospitals receive from Medicare reimbursement is based on the readmission rate. The criteria for readmission is an unplanned hospital admission within 30 days of discharge from the same or another hospital. Conditions evaluated for hospital readmission are heart attack, heart failure, and pneumonia. For patients readmitted to the hospital for any of these three conditions, Medicare determines if the hospital meets the criteria for readmission based on a formula adjusted for wages and the base amount paid per each **diagnosis-related group**—for example, pneumonia.[32] If the readmission rate failed to meet the standard, Medicare reimbursements were reduced for hospital admissions between October 2014 and September 2015 for Medicare patients admitted for any condition, not just the three conditions used to establish the hospital readmission rate. Losses in reimbursement ranged between1% to 3% of the usual reimbursement rate. For example, if the usual reimbursement rate is $15,000 for a patient on Medicare with kidney failure, the hospital with a 1.5% penalty would receive only $14,775.[33] Even though hospital readmission rates decreased between 2010 and 2013,[34] in the third year of the program, a record number of 2,610 hospitals received reduced payments for Medicare patients between October 1, 2014 and September 30, 2015. Penalties for excessive rates of hospital readmissions are expected to save the federal government $428 million as a result of lower reimbursement rates for these 2,610 hospitals.[35]

ACOs are **fee-for-service** organizations that agree to participate in the Medicare Shared Savings Program for at least three years. As part of the ACA, ACOs create incentives for hospitals and healthcare workers to coordinate patient care across all settings—the physician's office, hospitals, and long-term care. The **Medicare Shared Savings Program** rewards ACOs that reduce the rate of growth in healthcare

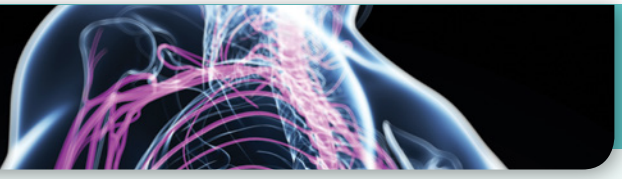
spending while providing quality care, for example, reducing duplication of services and preventing medical errors. The ACO is eligible for additional Medicare payments or bonuses for improving quality and reducing costs of patient care. ACOs that failed to meet the standard for quality and cost savings were financially responsible for the healthcare costs of patients instead of Medicare. CMS monitors quality and financial data from each ACO to determine if goals are being met.[36] One example is the Pioneer ACO, consisting of groups that had experience coordinating care across different settings. After the first year, healthcare spending slowed as much as 7% among some Pioneer ACOs, but increased 5% for other ACOs. In the second year, spending decreased about 5% for some and increased by a similar amount for other ACOs.[37] Since these programs are relatively new with limited data to demonstrate effectiveness, CMS will continue to monitor programs established to improve the quality of care while reducing costs.

SUMMARY

Initial problems with obtaining health policies through the ACA were resolved within the first several months. Although individuals initially had problems enrolling through the Marketplace because of IT problems, an estimated 15 million people obtained insurance coverage through March 2015, and an additional 12 million people obtained Medicaid or CHIP during this same period.

Certain provisions of the ACA were opposed by the states and certain businesses. Opposition by states to expand Medicaid because of concerns about the long-term financial burden of state governments led to the U.S. Supreme Court modifying the ACA to make Medicaid expansion by states optional rather than mandatory. Controversy about the requirement of the law to cover prescriptions for contraceptives for women led to the Supreme Court decision to support religiously affiliated businesses or closely held corporations that oppose certain contraceptives for female employees for religious reasons to opt out of contraceptive coverage for female employees. The Supreme Court ruled in favor of the U.S. government in allowing premium subsidies for individuals buying policies through the Federal Facilitated Marketplace.

Programs to reduce Medicare costs by reducing hospital readmissions and coordinating care to improve both quality while reducing costs report cost savings for Medicare. Hospitals and emergency rooms report lower uncompensated care as a result of greater numbers of individuals having health coverage. However, it will require several years to do a cost–benefit analysis of the ACA.



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Study Points

1. Concerns about nearly one-fifth of the gross domestic product (GDP) being spent on health care and large numbers of individuals being uninsured led to passage of the Affordable Care Act (ACA) in 2010.
2. The ACA, also known as ObamaCare, became law in March 2010 with goals of increasing access to health care for the uninsured while at the same time improving healthcare quality and controlling healthcare costs.
3. As a result of the ACA, individuals were able to obtain health insurance in two new ways—Medicaid was expanded to include those with incomes at 138% of the FPL, and the Marketplace was created for individuals with income between 100% and 400% of the FPL. The federal government subsidizes plans purchased through the Marketplace, thus lowering the cost of premiums.
4. The ACA was implemented in phases beginning in 2010 and ending in 2018. The federal and state governments established the Marketplace during 2010 and 2012, and uninsured people were able to obtain health insurance through expanded Medicaid and the Marketplace beginning in January 2014.
5. In 2015, A total of 15 million people obtained health insurance through the Marketplace and another 12 million people were newly enrolled in Medicaid or CHIP.
6. The ACA requires all health insurance policies to include minimum essential benefits for all applicants, and individuals with pre-existing health conditions such as diabetes were no longer denied access to health insurance.
7. The Data Service Hub was designed to determine eligibility for enrolling in Medicaid, CHIP, or subsidized Marketplace policies based on citizenship and income. Initially, there were problems with enrollment because of incorrect or incomplete applications and inadequate information technology systems to meet the high demand.
8. Supreme Court rulings modified three parts of the ACA that had been contested by lower courts. The outcomes of the rulings were that (1) expanding Medicaid became optional for individual states; (2) premium subsidies were allowed for individuals enrolling through a Federally Facilitated Marketplace; and (3) contraceptive coverage was exempted for female employees of houses of worship but required a request for accommodation by religiously affiliated employers or closely held corporations to exempt employers from providing contraceptive coverage, which was instead paid by the health insurance provider.
9. Many Southern states opted out of Medicaid expansion, which resulted in a disparity in access to health insurance and health care for those living in the South compared to other regions of the U.S. where Medicaid was expanded.
10. National health expenditures slowed between 2010 and 2014 and are projected to continue through 2019. Uncompensated care costs for hospitalization and emergency room visits for the uninsured were also lower in 2014 because of the lower cost of outpatient care for the newly insured.

Issues for Discussion

1. Go to the HealthCare.gov website and find out if the state where you live has a State-Based Marketplace. Go through the steps of applying and enrolling in a healthcare plan for the state where you live. Was the website easy to use? If not, why not?
2. Go to the HealthCare.gov website to link to the websites for Colorado and California. Compare the enrollment webpages for small business owners for these two states. What are the benefits for small businesses in enrolling employees through the Marketplace? What is the penalty for small businesses who don't provide health insurance for employees?
3. Do you agree with the Supreme Court decision, National Federation of Independent Business v. Sebelius, regarding minimum essential coverage and expansion of Medicaid? What are the pros and cons of the Supreme Court decision for minimum essential coverage?
4. Summarize the U.S. Supreme Court ruling in King v. Burwell that allows Americans who purchased health plans through a Federally Facilitated Marketplace to obtain premium subsidies.
5. Discuss the pros and cons of the U.S. Supreme Court ruling in Hobby Lobby v. Burwell regarding contraceptive coverage for female employees. Give examples of employers that would fit the exempt category and those that would fit the mandatory category.

Enrichment Activities

1. A video developed by the Henry J. Kaiser Family Foundation is a quick and understandable overview of the different mechanisms for obtaining healthcare coverage as a result of the ACA. The link to the video is here: https://www.youtube.com/watch?hmuv=JZ-kk6ueZt-U&feature=youtu.be.
2. The HealthCare.gov website has compiled many personal stories (Get Covered) on video by individuals who have obtained health insurance through the

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Marketplace. There are also stories by small business owners. Go to the website and listen to several stories (Internet: http://www.hhs.gov/healthcare/facts/mystory/index.htm).

3. The Internal Revenue Service (IRS) monitors compliance to minimum essential benefits for individuals and the requirement for employers to provide health insurance for employees. Go to the website to learn how the IRS monitors both individuals and employers (businesses) and the penalties for non-compliance (Internet: http://www.irs.gov/Affordable-Care-Act).
4. Go to the Henry J. Kaiser Family Foundation website and take the quiz on *ACA and Federal Taxes* to learn more about how premium subsidies are determined (Internet: http://kff.org/quiz/affordable-care-act-and-federal-income-taxes-quiz/).

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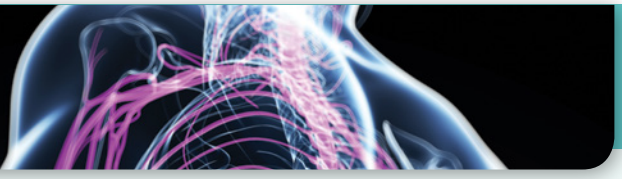

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CHAPTER 6

Medical and Health Information Technology

Objectives

After studying this chapter, the student should be able to:

- Differentiate between medical and health information technology.
- Name examples of medical technology innovations.
- List commonly used health information technology solutions.
- Explain the concepts of confidentiality and security in protecting patient health information.

Key Terms

3D printing
Apps
Bar coding technology
Billing process
Biomedical engineer
Clinical decision support system (CDSS)
Cloud computing
Computerized physician order entry system (CPOE)
Confidentiality
Electronic health record
Electonic materials management
e-prescribing
Functional magnetic resonance imaging (fMRI)
Health information technology (health IT)
Interoperability
Interventional X-ray machine
Master patient index (MPI)
Medical technology
Mobile technology
Patient portal
Patient registration
Patient registration process
Picture archiving and communication system (PACS)
Speech recognition software
Telemedicine
Vendor-neutral archive (VNA)
Vital statistics
Wearable technology

Introduction

The healthcare industry and its many professions have experienced numerous changes over the last century. Among the most striking is the development of medical technology and one of its subsets called health information technology. **Medical technology** refers to the procedures, equipment, and processes by which medical care is delivered. Examples include new medical and surgical procedures (e.g., angioplasty, joint replacements), drugs (e.g., biologic agents), and medical devices (e.g., digestible sensors, pacemakers, computed tomography [CT] scanners, implantable cardioverter-defibrillators). An example of medical technology is seen in **FIGURE 6.1**.

By contrast, health information technology is focused on the support aspect of delivering patient care. **Health information technology (Health IT)** refers to an array of technologies to record, store, retrieve, protect, share, and analyze health information. Examples include support systems such as electronic health records and speech recognition software. Both medical and health information technology are the focus of this chapter.

MEDICAL TECHNOLOGY

Medical technology includes a multitude of products used to diagnose and monitor human conditions and diseases. This technology also is available to treat diseases that were once considered high risk or even fatal and includes instruments used to perform less invasive operations.

The continuing flow of new medical technology results from many factors. Healthcare practitioners are always working to find better ways to treat their patients and incorporating new technologies is one way to do so. Some healthcare practitioners may feel the need to offer the "latest and greatest" in care because they compete with other providers for patients. Professional goals such as peer recognition, tenure, and prestige may influence healthcare professionals to find ways to improve their practice through use of medical technology.

Consumers also are a prime consideration in the growth of medical technology. Consumer goals to achieve and maintain good health can often be met through advances in medical technology. Consumer demand is also generated by the increased public awareness of advances in medical care achieved through medical technology because of the roles played by the media, the Internet, and direct-to-consumer advertising.

Health insurance systems also play a role in advancing medical technology. Medical treatments can be very expensive, and health insurance provides payment for new innovations. Consumers looking for ways to ensure access to the type of medical care they want may increase the demand for health insurance. The promise of better health through improvements in medicine is a strong motivator for consumers.

FIGURE 6.1 Doctor operating using surgical microscope.

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Much of the work performed in this discipline is done by **biomedical engineers**, persons who use their knowledge of biology, medicine, technology, and mechanical engineering to research and develop new equipment. These engineers have created miniature robots that are used to perform spinal surgeries considered highly complex and dangerous. They have created miniaturized pacemakers that function without any disturbance to the patient and drugs that can be activated by light to seek out diseased cells. They have created digestible sensors that monitor a patient's bodily systems and transmit patient information to healthcare providers so they can customize the patient's care.

Technology Innovations

The number and types of medical technology employed in health care could fill an entire textbook. This section addresses some of the innovations that currently play a role in health care and some that show promise to do so in the future.

Many healthcare practitioners are concerned about treating patients whose access to health care may be limited. Telemedicine addresses those concerns. **Telemedicine** means the use of electronic communications and information technologies to provide or support clinical care at a distance.[1] The connection allows the healthcare provider to diagnose, treat, and monitor patients remotely. Examples include transferring diagnostic images to a specialist for a second opinion and video visits for patients located thousands of miles away. Patients can hold video conferences with physicians to save time and money normally spent on traveling to another geographic location, or they can send health information instantaneously to any specialist or doctor in the world. Remote monitoring devices can track the blood sugar and blood pressure readings of patients, facilitating collaboration between healthcare practitioners and patients on a shared care plan between office visits. An image showing the use of telemedicine equipment is seen in **FIGURE 6.2.**

The use of mobile devices has exploded in the healthcare field, propelled by the use of medical software applications or apps. **Apps** are software programs developed to run on a computer or mobile device to accomplish a specific purpose. Some apps can simulate surgical procedures or can conduct simple medical exams, such as vision and hearing tests. Other apps help the physician develop patient risk profiles and provide drug dosage and interaction information. The benefits are numerous, and new apps are created on a daily basis.[2]

Patient registration involves creating a set of reference images with medical imaging equipment and recording the images in a digital format for the computer to map out. This term is not to be confused with the patient registration process which is discussed later in this chapter. Patient registration creates a detailed reference about a patient's body and can be used to pinpoint the location of a tumor, for example. This information becomes part of the patient's electronic health record and can be used in the future. For example, a surgeon may use this information in a follow-up appointment to judge whether a tumor has grown or responded to treatment.

Interventional X-ray machines are pieces of high-resolution fixed X-ray equipment that allow physicians to diagnose and perform surgery in a minimally invasive manner. The images are of high clarity and allow the physician to work on the patient based on the images seen on the machine as opposed to looking into the patient's body directly. Patients benefit because both the dose of radiation and the impact on the human body is lower than what might occur

FIGURE 6.2 Doctor using telemedicine.

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FIGURE 6.3 Interventional X-ray machine.
© 3AlexD/Getty Images

with traditional surgery. An example of an interventional X-ray machine is seen in **FIGURE 6.3**.

Robots are another form of technology used in medical practice. These robots can be used by surgeons to ensure that surgery is more precise. Small instruments attached to a robotic arm are designed to replace traditional steel tools, allowing these instruments to perform with smoother, feedback-controlled motions than could be achieved by the human hand. Robots are also used in research as anatomical models of humans, designed to make movements in the same way humans do. An example of surgical tools attached to a robotic arm is seen in **FIGURE 6.4**.

Functional magnetic resonance imaging (fMRI) shows promise to greatly advance knowledge of the brain. fMRIs trace the work of brain cells by tracking changes in oxygen levels and blood flow to the brain. The patient remains awake in the scanner and performs a simple task, like identifying a color or performing a math problem. As the patient performs the task, the fMRI tracks the areas of the brain that are activated by tracing the speed at which cells metabolize sugar or glucose. These fMRIs are used in the study of depression, brain cancer, autism, and memory disorders, among other areas.

FIGURE 6.4 Surgical robot.
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One of the most promising technologies in health care is the use of 3D printing. **3D printing** refers to a manufacturing method whereby three-dimensional objects are quickly made on a machine connected to a computer containing blueprints for the object. Objects made through 3D printing show promise because the blueprints can be customized to the patient's situation through use of patient-specific data to create a physical solution. This method also costs less than comparable objects manufactured in a traditional method, lowers risk to the patient, and can reduce operating time. This new method is currently being used to create prosthetics, orthopedic implants, and lab equipment such as pipettes and minifuge rotors. Research is ongoing for other applications, such as growing human tissue.[3] An example of a human hand generated by a 3D printer is seen in **FIGURE 6.5**.

Not all medical technology advances involve machines. For example, some medications have been created as targeted therapies for cancer and HIV/AIDS. New medications have been created that can be swallowed and their activation delayed until biological processes break them down as they reach certain organs. A new anti-bleeding gel has been developed that uses plant polymers to halt bleeding instantly. Research on the mix of microbes in the digestive tract has led to development of treatments for obesity.

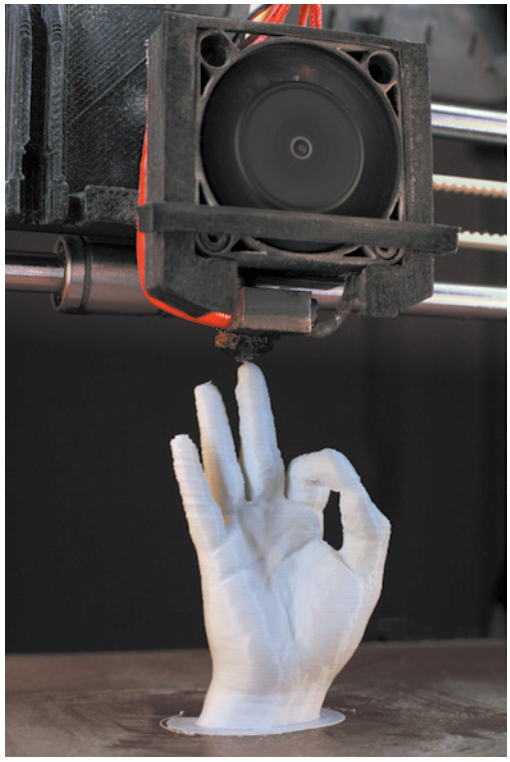

FIGURE 6.5 Hand created by 3D printer.
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TABLE 6.1 Health IT Applications

Health Information Technology	Examples
Administrative functions	Billing process Electronic materials management Patient registration process Vital statistics reporting
Clinical functions	Clinical decision support systems Computerized physician order entry for drugs, labs, and procedures Electronic health records Electronic prescribing Picture archiving and communication systems for filmless imaging
Infrastructure	Bar coding technology for drugs, medical devices, and inventory control Cloud computing Desktop, laptop, and tablet computers Mobile technology Speech recognition software Wearable technology Wireless networks

HEALTH INFORMATION TECHNOLOGY

Improving the delivery of patient care and producing optimum outcomes are goals of many healthcare providers and systems. One of the most important ways in which these goals can be accomplished is through use of health IT. Healthcare practitioners need the right information at the right time in order to make the right decisions. Leveraging the many forms of health IT influences the probability of this happening.[4] While not all inclusive, examples of commonly used health IT solutions are addressed in this section and listed in TABLE 6.1.

The field of health IT bridges several professional disciplines, including medicine, law, informatics, computer science, business, project management, and research. Those persons who enter this field generally fall into one of two categories: those who focus on the information technology in terms of infrastructure (hardware, software, and the systems that surround them) and those who focus on what can be accomplished with the data recorded, reported, and stored by the infrastructure. One talented individual in the field of health IT is the subject of the professional profile in this chapter.

Clinical Applications

The clinical information needed to make informed decisions changes periodically as guidelines and clinical evidence evolve. Similarly, the condition of the patient changes over time. Because of the need for clinicians to continually keep current with medical protocols and apply them to specific situations, an automated answer arose in the form of a clinical decision support system. A **clinical decision support system (CDSS)** refers to the variety of technologies that provide healthcare practitioners with diagnostic and treatment recommendations. Examples include simple alerts, prescription drug interaction warnings, and clinical pathways and protocols. The system applies computable biomedical knowledge to specific patient data and generates information for the clinician to use in treating a specific patient. The information is filtered, organized, and presented in a way that allows the clinician to make a quick decision and take action. This system assists the healthcare provider in dealing with what sometimes appears to be an overload of information. It also makes it possible for clinicians to have access to evidence-based knowledge because this knowledge is integrated into the system.[5] Finally, the goal of improving the quality of patient care and enhancing the outcome for the patient is advanced.

Most clinical decision support systems are part of an electronic health record system. An **electronic health record (EHR)** refers to an individual patient health record stored in a computer database for easy access by physicians and other healthcare workers regardless of the setting—clinic, hospital, nursing home, or emergency care center. The information contained in the record is real time and offers a snapshot or picture of the patient's condition and treatment. EHRs are easily accessible to those who are treating the patient and

Professional Profiles

Name: Charles, MHA, RHIA
Job Title: Health Information Technology Consultant
Education: MS in Health Administration; BS in Health Information Management

Q: Tell us about your job and the type of organization you work in.

A: I work for a consulting company in their healthcare division. The clients are health systems such as hospitals, and I meet with the executives. I manage about two projects at a time.

Q: Describe a typical work day.

A: There is no typical work day. I get in at 6:30 AM and start with e-mail. Meetings start at 8 AM, including strategy meetings; there are technical meetings for more servers that the electronic health record system will run on. We discuss the budget. I recently met with the Mayor in New York City because the hospital system I am assisting with reports up to state government. I do high-level management and sit with senior level executives. But I am also in the weeds dealing with a problem—how the product is working for the hospital system—so they can build out the system to meet their needs.

Q: What do you like most about this profession?

A: I love a challenge and doing something different every day. I have worked around the globe with clients—Germany, UK, Amsterdam, Norway, and domestic travel. [It's] 90% travel—home one day a week.

Q: Is there room for advancement in this field and what kind of academic training is required?

A: Yes, definitely. If you have the drive, dedication, and ambition you can rise to the top. A Master's degree is required.

Q: Name and explain what part of your academic training most prepared you for this profession.

A: Being in student government and being a leader in the organizations that I was part of, as well as leadership positions in college, were essential to prepare me for a career in health IT.

Q: Did you face obstacles in pursuing your goals? If so, describe them and how you overcame them.

A: It's not easy. Long nights and early mornings, good grades, and doing extracurricular activities are required. Time is a big challenge—I needed to prioritize my time.

Q: What do you wish you had known in high school/college about pursuing this career?

A: That it even existed. I did not know about this career. One should look at what is coming, not what is already there.

Q: What advice would you give someone who is considering this career?

A: Be smarter about how you work.

Q: What skills are most essential for being effective in this career?

A: Problem-solving, effective listening, effective communication skills, and leadership skills are key.

serve as a way for clinicians to communicate about the status of a patient.[6]

Implementation of EHRs has grown dramatically in the last decade and particularly since the inception of the HITECH Act in 2009. The HITECH Act introduced the meaningful use program. This program makes physicians and hospitals eligible to receive incentive payments if they prove their use of the EHR systems meets certain criteria. Among these criteria is a patient portal. A **patient portal** refers to an on-line application that allows a patient to interact and communicate with his or her healthcare provider. With a portal, patients have the ability to view, download, and transmit their health information and send messages to their healthcare providers in a secure fashion.[7]

A second meaningful use criterion deals with the deployment of computerized physician order entry systems. A **computerized physician order entry (CPOE)** system in its most basic form is a medication ordering and fulfillment system. Some more advanced CPOE systems also include lab orders, radiology studies, procedures, discharges, transfers, and referrals. The strength of these systems is that all the orders are entered into the EHR and can be cross-checked in real time for potential errors or problems, such as an allergy. The systems also serve to make prescription orders legible, a difficulty long associated with paper prescription pads or paper forms. When referring solely to ordering medications, CPOE is often called **e-prescribing**.

One significant benefit of EHRs is that information contained within them can be shared with other healthcare providers across different healthcare organizations. To accomplish this, the computer systems of the different healthcare organizations must be able to talk to each other electronically. **Interoperability** refers to the mechanism of electronic communication among organizations so that data can be incorporated from one system into another. Achieving interoperability allows the patient's information to follow him or her to visits with numerous healthcare providers and creates a longitudinal record of a person's health over time. Currently, interoperability is a significant challenge within the health IT field, as some proprietary systems do not communicate easily with other proprietary systems and interfaces are necessary. Through the development of standards and rules, the federal government is working to address these problems.

Another challenge with interoperability rests with proper identification of the patient. Medical offices, treatment centers, and hospitals all must maintain a **master patient index (MPI)**, a listing or database of all the patients treated by the healthcare provider, typically arranged according to an identification process. The MPI serves as a permanent record that links information about the patient, both clinical and demographic, across time. The challenge is that some patients share the same data characteristics, such as name and birthdate, making it difficult to differentiate between patients. Medical professionals who rely on information that is not properly tied to the right patient can create medical mistakes. Electronic systems containing analytical processes can minimize but not completely address the problem of duplicate entries in the MPI.

One challenge of interoperability is the need for electronic systems that are developed for different purposes to interact with each other. Pictures and images created from a variety of source machines pose such a problem. A **picture archiving and communication system (PACS)** refers to the technology that captures and integrates diagnostic and radiological images from various devices, stores them, and disseminates them to a health record, a clinical repository, or other points of care. For example, using such a system means the healthcare provider no longer needs to file, retrieve, or transport film jackets of X-rays. To achieve interoperability, many PACS work with a **vendor-neutral archive (VNA)**, a single, consolidated archive platform used to host files from different PACS software. This arrangement allows all types of images stored in separate PACS to be compiled and merged into the same system, increasing the ability to share data internally and externally.

Administrative Applications and Infrastructure

While considerable health IT work is focused on clinical functions, other functions are equally as important. For example, healthcare providers cannot stay in practice or business unless they have a steady stream of income. This stream of income derives from the billing process. The **billing process** refers to the method of submitting and following up with claims made to government payers, insurance companies, and patients for services rendered to patients.

The Health Insurance Portability and Accountability Act (HIPAA) governs virtually all healthcare billing transactions in the United States. HIPAA establishes security and privacy standards for health information, commonly referred to as the Privacy and Security Rules. These rules establish administrative, technical, and physical safeguards of patient information so that the information may remain confidential, possess integrity, and be electronically formatted for transmission between healthcare providers, insurers, and governmental payers.

HIPAA requires most claims for healthcare services to be submitted via electronic means. Specific codes are assigned to the patient's diagnosis and any procedures performed using the most commonly known coding systems such as International Classification of Diseases (ICD)-10 and Current Procedural Terminology (CPT), and the codes and other data are transmitted electronically to the government payers and insurance companies. An electronic connection is made from the government payer or insurance company in response to the claims submitted. Those amounts not paid for by the government payers or the insurance companies are then billed to the patient. Considerable effort in the IT community has been placed on following standards and technologies for smooth electronic claims transmission.

Efforts have also focused on improving efficiency concerning the many supplies required by healthcare providers when they treat patients. **Electronic materials management** refers to the tracking and managing of inventory of medical supplies, drugs, and other materials. This system allows for paperless ordering of supplies, drugs, and materials, shorter lead times between order and delivery of goods, and a method for automating inventory control.

Many ways to manage materials involves leveraging bar code labels and technology. **Bar coding technology** refers to the use of an optical scanner to electronically capture information encoded on a product. It is used with medications as a way to match drugs to patients by scanning the bar codes on both the medications and the patient's arm bracelet. This technology is also applied to medical devices, lab, and radiology equipment.

Other areas of focus include properly registering patients when they enter the hospital, office, or treatment center. Referred to as the **patient registration process**, this activity involves obtaining pertinent personal, financial, and social information from the patient about their medical history, contact information, and insurance billing data, among other things. This routine activity is generally the first entry in the patient's electronic health record and the data obtained follows the patient through the entire episode of care and into the billing cycle.

Other health record data facilitated for collection and dissemination by health IT involve vital statistics. **Vital statistics** refers to the information that chronicles certain life events of individuals, such as birth and death. An example of a birth certificate is seen in FIGURE 6.6. Every state has either a law or set of regulations that require the reporting of vital statistics; the specifics of what must be reported vary by state. For example, common reporting requirements include communicable diseases, child abuse, fetal deaths, injuries caused by deadly weapons, and cancer. Health IT is used to capture this information and transmit it to the requisite state department of health or similar agency within the specified time period.

FIGURE 6.6 Birth Certificate.
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Another significant development in health IT involves **speech recognition software**. This refers to collecting the spoken word, analyzing those words, and presenting the results as data. Speech recognition software converts the spoken word into text on-screen. This software is very useful for those individuals who cannot use a keyboard or other form of manual input device effectively. It is also useful for dictation and translation of health data.

Most of the equipment used by healthcare providers is either a stationary or mobile object. **Mobile technology** refers to equipment that can be carried or wheeled from place to place. Examples include laptops, tablets, and smartphones. Mobile devices offer many advantages, including the ability to bring them to the patient's bedside and access health information at the place it is needed. Mobile devices facilitate data collection, allowing data to be entered directly without delay. Practitioners have access to any type of information they need within mere seconds, from drug information to research and studies, patient history or records, and more. Disadvantages include the fact that they are particularly prone to being damaged, lost, or stolen because of their smaller size and lighter weight.

As ubiquitous as mobile technology is in health care, the latest trend is the use of wearable technology. **Wearable technology** refers to a computer that can be worn on a person. Typically the size of a smartphone or smaller, these devices use wireless technology to perform functions. The use of wearable technology allows for inexpensive, continuous physiological monitoring with little manual intervention by the patient or the healthcare provider. For example, healthcare practitioners can use them to monitor a patient's vital signs and can receive alerts of safety issues and sudden medical emergencies. Some models are set up so that the patient can contact a medical center for advice or push an emergency button that automatically sends an alert to paramedics with the person's status and location.

In addition to the hardware and software present in the delivery of patient care, consideration must also be given to the virtual world. Some healthcare organizations and providers use cloud computing as an administrative aid. **Cloud computing** refers to the virtualization of servers, meaning that servers are not physically present at the healthcare site. Data privacy and security concerns are present with cloud computing, and health IT professionals are working to address those concerns.

Health Information Technology and the Law

As new methods of administering care are developed and technology continues to evolve, the law works in tandem. Numerous HIPAA regulations target concerns about the confidentiality and security of patient information and the steps that must be taken to maintain privacy in the digital world. The regulations establish standards for ensuring confidentiality and security of patient information and

protecting patients' health information from unauthorized access and use.

Confidentiality of patient information is protected by both federal and state law. **Confidentiality** refers to the healthcare professional's obligation to maintain patient information in a manner that will not permit dissemination beyond the healthcare provider. HIPAA regulations give patients access to their protected health information (PHI) and protect the privacy of their information by limiting access to it by other parties.

Many of these regulations require that all healthcare providers maintain secure electronic health records. The regulations specify multiple security measures to be employed, including authentication and permission protocols, encryption, and damage prevention techniques. Unfortunately, breaches of protected health information do occur, whether because of identity theft, unauthorized access to data, or theft or loss of laptop computers and mobile devices. The regulations ensure that patients are notified of breaches of protected health information. A healthcare provider that experiences a breach of PHI can be fined by the federal government.

Healthcare practitioners must exercise care when choosing to implement new technologies into their services. They should ensure that all technologies are HIPAA compliant before investing in their implementation.

SUMMARY

Technological innovations in the healthcare industry provide healthcare professionals with new ways to improve the quality of care delivered to their patients and improve the state of health care worldwide. Medical technology can improve access to care for those whose access is limited, improve quality of care through more precise testing and surgical procedures, and offer opportunities to learn more about the human body than ever in history. Health information technology offers better access to patient information that can be used to increase patient safety and improve patient outcomes. Law and technology work together to protect and secure patient information from unauthorized access and use.

Additional Information

For more information about the federal government's efforts with health IT, visit

- Office of the National Coordinator for Health Information Technology (ONC), https://www.healthit.gov

For more information about private sector initiatives to improve health care through IT, visit

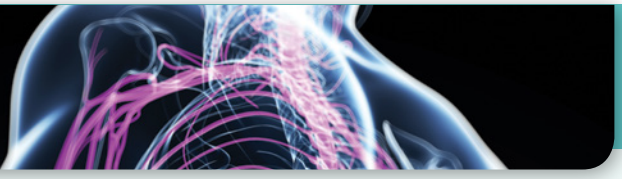
- The Center for Private Sector Health Initiatives (PSHI), http://pshi.fhi360.org
- The Institute for Healthcare Improvement (IHI), http://www.ihi.org/Pages/default.aspx

For more information about professional associations focused on improving health care through IT, visit

- American Health Information Management Association (AHIMA), http://www.ahima.org
- Healthcare Information and Management Systems Society (HIMSS), http://www.himss.org/

STUDY POINTS

1. Very little in the field of medicine has not been affected by new technology.
2. Medical technology includes a multitude of products used to diagnose, monitor, and treat human conditions and diseases, including instruments used to perform less-invasive operations.
3. The demand for new medical technology springs from consumers, healthcare practitioners, and health insurance systems.
4. Health information technology involves both clinical and administrative applications and infrastructure.
5. An electronic health record documents the patient's condition and treatment.
6. Federal law and regulations serve to protect and secure health information.



LEARNING PORTFOLIO

Issues for Discussion

1. Discuss the types of technological changes you have seen over your lifetime with your instructor and classmates. Speculate on what types of changes may occur in the healthcare field over the remainder of your lifetime.
2. Wearable technologies that have healthcare applications have become common place. Discuss with your instructor and classmates the types of wearable technologies with which you are familiar and whether or how these wearable technologies influence individual behavior.

Enrichment Activities

1. Choose one of the technology innovations featured in the text under the Medical Technology section. Research more information about this technology and create a presentation (narrative paper, PowerPoint presentation, or infographic) that provides a broader understanding of the technology and its uses.
2. Visit the following websites: https://www.youtube.com/watch?v=nqZYZ_4Lh5Q and https://www.youtube.com/watch?v=QzKTXyvwHSA to hear biomedical engineers speak about their career choices.
3. Choose one of the clinical or administrative examples featured in the text under the Health Information Technology section. Research more information about this application and create a presentation (narrative paper, PowerPoint presentation, or infographic) that provides a broader understanding of the application and its uses.

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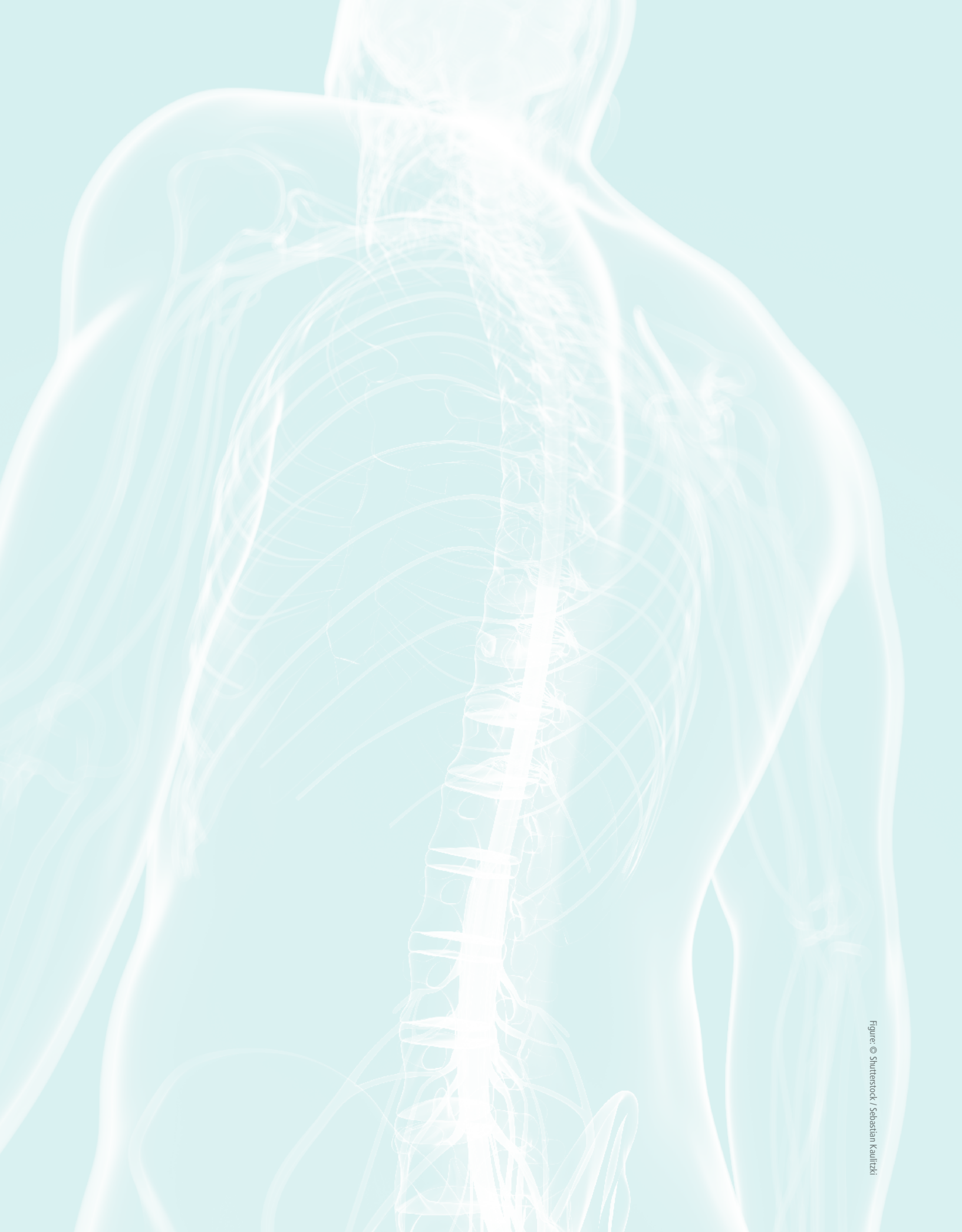
PART TWO

Jobs and Careers

Nurse with tablet: Getty Images/iStockphoto; OR: Shutterstock/xmee;
Dog: Shutterstock/DuxX; Man in lab: Getty Images/iStockphoto;
Dentist: Shutterstock/foto infot; Spine: Shutterstock/Sebastian Kaulitzki



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CHAPTER 7

Health Career Planning

Objectives

After studying this chapter, the student should be able to:

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

Key Terms

Affordable Care Act (ACA)
Certification
Community and social service occupations
Healthcare practitioners and technical occupations
Health Professional Shortage Areas (HPSAs)
Health Resources and Services Administration (HRSA)
Healthcare support occupations
Indian Health Services (IHS)
Licensure
Maldistribution of health personnel
National Health Service Corps (NHSC)
Personal care and service occupations
Primary care physicians
Professional certification
Professional registration

Introduction

Because health care has developed from a small concern into a multibillion-dollar industry and the largest employer in the United States, it is appropriate that this chapter assist students in obtaining facts that will steer them toward satisfying careers in health services. The first five chapters in this book were devoted to the development of healthcare services, healthcare 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.

Desirable traits for persons considering health careers are a strong desire to help others, a genuine concern for the welfare of patients and clients, and the patience and emotional stability to deal with people of diverse backgrounds in stressful situations. An understanding of the roles of other health professionals and a collaborative attitude is necessary for health professionals since each contributes to the care of individual patients. If you enjoy working with people, there are many health careers that involve direct contact with clients or patients. Occupations in nursing, medicine, dentistry, dietetics, social work, physical therapy, and recreational and occupational therapy are some health career areas that will give you the opportunity to work with and help people of all ages. Workers in other careers have limited direct contact with patients but play a significant role in the health and well-being of patients and clients—for example, laboratory technicians and health information technicians.

If you are considering a career in the healthcare field, there are many opportunities. Some careers require only a high school diploma while others require graduate degrees plus an internship. This chapter will help the student explore the possibilities and answer these questions: What are the fastest-growing health careers? What are the educational requirements for different health careers? What financial resources are available for students preparing for a health career?

In addition, ask yourself how much time you are willing to spend preparing for your career and how flexible you are about where you live.

WHO ARE THE HEALTHCARE WORKERS?

Employment opportunities exist along a wide continuum from hospitals and physician and physical therapy offices at the medical end, through long-term care facilities and adult day care facilities to assisted-living and retirement communities at the social-support end. The continuum of curative and supportive services ranges from clinical services such as surgery and annual physical exams to supportive services such as homemaking.[1]

Healthcare occupations are marked by a high degree of specialization. They feature a defined hierarchy based on educational requirements, credentialing, and the extent to which both are involved in clinical care. The Bureau of Labor Statistics classifies health care into three broad categories. First, **healthcare practitioners and technical occupations** is a broad category with high educational requirements.

Practitioners provide direct clinical care—some examples are physicians, nurses, dentists, audiologists, speech pathologists, dietitians, chiropractors, physical therapists, and occupational therapists. Technical occupations also require substantial training and include clinical lab technologists, dental hygienists, and health information technicians.[1]

The second broad category is **healthcare support occupations** with lower educational requirements and shorter training periods; these represent the majority of healthcare workers. Examples are licensed practical nurses (LPNs), nursing assistants, medical assistants, dental assistants, and physical therapy assistants and aides. Support personnel typically work under the supervision of clinical practitioners such as physicians, nurses, physical therapists, and dentists.

The third broad category combines **community and social service occupations** and **personal care and service occupations**. Workers in this category do not provide specific healthcare-related services. However, some—such as social and human service assistants and personal care aides—may work in the healthcare sector and provide services that overlap those of nursing assistants, who support residents with activities of daily living in long-term care or rehabilitation facilities. Most of these positions do not have educational or training requirements—most receive on-the-job-training.[1]

Although workers in the United States are almost equally distributed between male and female, the majority of healthcare workers are female, and slightly more than three-fourths are white. Females account for 80% of workers for nearly half of all healthcare occupations. The exceptions are five professions in which the majority are males—dentists, chiropractors, physicians, optometrists,

and emergency medical technicians (EMTs) and paramedics. Most of the male-dominated professions are in the healthcare practitioner category, except for EMTs and paramedics, which is in the health technologists and technicians category.[2]

A goal of the **Health Resources and Services Administration (HRSA)** is to increase the diversity of the healthcare workforce to more closely match the sex, race, and ethnic diversity of the United States. Grant programs provide opportunities for minority students to receive financial support to pursue health careers. More detailed information is available under *Additional Information* at the end of this chapter.[2]

PROJECTED DEMAND FOR HEALTHCARE PERSONNEL

As one of the largest industries in 2013, health care provided 15.8 million jobs for wage and salary workers and is projected to generate 4.1 million new jobs between 2012 and 2022.[3] The demand for healthcare personnel is expected to increase by 26% between 2012 and 2022 compared to an 11% increase for all occupations. The economic downturn beginning in 2008 resulted in job losses in all parts of the U.S. economy except for the healthcare industry, which has had steady job gains since 2004 despite the downturn in the economy.[4]

There are many reasons for projected growth in the demand for healthcare workers. First, the number of those over 65 years of age is expected to increase by 40%, and this group will need supportive care as well as medical assistance in managing chronic diseases. Second, the 2010 **Affordable Care Act (ACA)** has increased the number of people with health insurance, resulting in a greater demand for routine care including clinical preventive services such as mammograms and immunizations.[3] Third, shortages in healthcare professionals are projected beginning in 2020 because many health professionals will reach retirement age, while the number of younger workers is expected to remain static. The U.S. Bureau of Labor Statistics predicts a critical shortage of registered nurses (RNs) and significant shortages of **primary care physicians**.

The labor force is projected to become more diverse, with greater numbers of Hispanics and fewer whites, because the Hispanic population in the United States is growing faster than that of non-Hispanic ethnic groups. The number of older workers is also expected to increase because many baby boomers are continuing to work past the usual retirement age. Workers 75 years and older are expected to have the fastest rate of growth compared to younger workers in the next decade.[4]

According to the U.S. Bureau of Labor Statistics, 13 of the 20 fastest-growing occupations are healthcare related. Projections are for growth close to 50% between 2012–2022 for these 13 health-related professions as shown in FIGURE 7.1.[4]

Projected increases for the two categories of occupations that include healthcare workers are healthcare support and healthcare practitioners and technicians.[2] Both the percent growth (shown in Figure 7.1) and the total number (shown in TABLE 7.1) are highest for personal care aides and home health aides. Careers are listed in the order of greatest demand in Table 7.1, starting with personal care aides with projections for nearly 1.8 million workers in 2022.

Although projected growth is high for the 13 health careers, the number of new positions available for each profession varies widely. For example, a career with fast growth but low numbers is genetic counselors, with a total of only 3,000 employees projected for 2022. The highest numbers are for healthcare support personnel—home health aides, personal care aides, and medical secretaries.

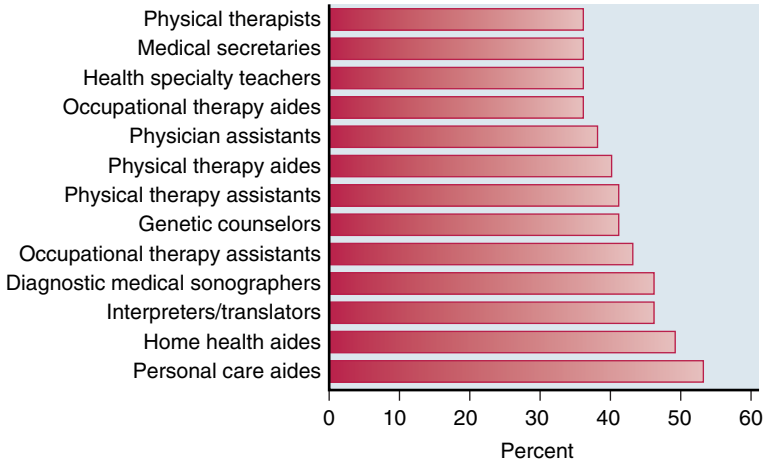

FIGURE 7.1 Growth in healthcare employment, 2012–2022.
Courtesy of U.S. Department of Labor.

TABLE 7.1 Projections for Numbers, Salary, and Educational Requirements for 13 Fastest-Growing Health-Related Professions, 2022

Profession	Total Number	Median Annual Salary May 2014*	Educational Requirements
Personal care aides	1,771,400	$21,201	On-the-job training
Home health aides	1,299,800	$22,400	On-the-job training
Medical secretaries	715,000	$33,530	High school diploma
Physical therapists	277,700	$83,940	Graduate degree
Physician assistants	120,000	$97,280	Graduate degree
Physical therapy assistants	100,700	$54,330	Associate's degree
Health specialty teachers, post-secondary	97,000	$90,210	Graduate degree
Interpreter/translators	92,000	$49,320	Bachelor's degree
Diagnostic medical sonographers	85,900	$68,390	Associate's degree
Physical therapy aides	48,730	$26,660	High school diploma
Occupational therapy assistants	42,900	$52,300	Associate's degree
Occupational therapy aides	8,570	$29,040	High school diploma
Genetic counselor	3,000	$69,540	Master's degree

Data from: Bureau of Labor Statistics. U.S. Department of Labor. *Occupational Outlook Handbook 2014-2015 Edition*. 2014; Bureau of Labor Statistics, U.S. Department of Labor. *May 2014 National Occupational Employment and Wage Estimate United States*. March 25, 2015. Internet:http://www.bls.gov/oes/current/oes_nat.htm

These support positions have both low educational requirements and low salaries. Careers which require graduate degrees—physical therapists, physician assistants, health specialty teachers at the post-secondary level, and genetic counselors—also have higher salaries. Careers that are available without specific educational requirements are *aides*—home health, personal care, occupational therapy, and physical therapy—and medical secretaries, although most positions will require a high school diploma and will provide on-the-job training. Positions that require training at the Associate's degree level are occupational therapy assistants, physical therapy assistants, and diagnostic medical sonographers. Interpreters and translators are not in the health professions category; however, interpreters are employed by many hospitals and clinics in urban areas because of the large numbers of immigrants for whom English is not the first language. Although projected growth for registered nurses is not as high as other health workers, the total number of new jobs for RNs is projected to be 527,000—close to the 581,000 for personal care aides, the health-related profession projected to having the highest number of new jobs in 2022 (**FIGURE 7.2**).[4]

EMPLOYERS OF HEALTH PROFESSIONALS

Healthcare workers are employed in a variety of settings. The five major industries that employ health workers are hospitals, offices of health practitioners, nursing and residential facilities, home health services, and outpatient, laboratory, and other ambulatory services. Almost 75% of healthcare employees work in offices of physicians, dentists, or other health practitioners. These offices tend to be small and represent about one-fourth of healthcare employment. Hospitals constitute only 1.3% of employers but employ about one-third of all healthcare workers. Nursing homes are 3% of employers, yet employ 12% of workers.[1]

As shown in **TABLE 7.2**, the primary employer for healthcare workers was hospitals (39%) in 2013. Another 26% were employed in offices of health practitioners—for example, physicians, dentists, or physical therapists. A total of 20% were employed by nursing and residential care facilities, including skilled nursing facilities and assisted-living or continuing care facilities and other residential facilities for those with mental illness, substance abuse, or developmental

FIGURE 7.2 One of the fastest growing health professions is personal aides.
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disabilities. Another 8% were employed by home healthcare services that provide skilled nursing, personal care, and other services such as physical therapy. The remainder of workers were employed in outpatient mental health and substance abuse centers, medical and diagnostic laboratories, and other ambulatory care settings, including ambulance services.[3]

Growth for healthcare workers is expected to change by industry in the next decade, with fewer jobs available in hospitals in an effort to decrease the cost of healthcare delivery, since care is most expensive in the hospital. Greatest increases will be seen in home health care services (expected to see nearly a 60% increase) as older adults seek ways to remain in their homes. Projections also include a 44% increase in jobs in outpatient, laboratory, and other ambulatory settings, a 30% increase in jobs in offices of health practitioners, and a 24% increase in nursing and residential facilities.[3]

Healthcare jobs are found throughout the country, but they are concentrated in metropolitan areas. More details about job opportunities and working conditions for major employers follow.

TABLE 7.2 Healthcare and Related Employment by Industry, 2013

Industry	Number	Percent
Hospitals, private, federal, state and local	6,110,000	39%
Offices of health professionals	4,057,000	26%
Nursing and residential facilities	3,228,000	20%
Home health care services	1,238,000	8%
Outpatient, laboratory, and other ambulatory care services	1,194,000	8%

Data from: Torpey E. Healthcare: Millions of jobs now and in the future. *Occupational Outlook Quarterly*. Spring 2014. Internet: 222.bls.gov/ooq

Hospitals

As a group, hospitals are the best-known and largest single employer of health workers (**FIGURE 7.3**). Hospitals employ workers with all levels of education and training, thereby providing a wider variety of opportunities than is offered by other segments of the healthcare industry. In general, hospitals care for patients with various medical conditions requiring diagnosis and surgical or medical treatment. Patients in these hospitals generally stay a short time—a few days to a few weeks.[3]

In *specialty hospitals*, patients are usually limited to those who have a specific illness or condition. Specialty hospitals may treat psychiatric illnesses or chronic diseases such as cancer. *Rehabilitation hospitals* specialize in the care of patients after a spinal cord injury, traumatic brain injury or stroke, or those with a neurological disorder or chronic pain. *Pulmonary care hospitals* specialize in care of patients requiring ventilator support.

FIGURE 7.3 Hospitals employed the largest number of health professionals in 2013.
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Specialty hospitals are identified as "long-term care facilities" because their patients are usually hospitalized for several weeks to months before they are well enough to return to their homes.

The mix of workers needed by hospitals varies depending on the size, geographic location, goals, philosophy, funding, organization, and management style of the institution. Hospitals employ many practitioners for diagnosing and treatment of patients, as well as health technologists and technicians and social workers. Although the majority of hospitals employ healthcare workers, hospitals also employ office support personnel and maintenance, sanitation, housekeeping, and food-service workers.[3]

The majority of healthcare work is shift work since the hospital is open 24 hours a day, 365 days a year. Nurses and nursing assistants typically work 12-hour shifts from 7 AM to 7 PM three days per week, and may rotate between day and evening shifts. Clinical laboratory workers also typically work a day, evening, or night shift. Most other hospital employees work a day shift, although some professionals such as radiation technologists or respiratory therapists may be required to work both day and night shifts.[3]

Offices of Health Practitioners

The industry with the second highest number of healthcare workers is in the offices of health practitioners; the numbers are expected to exceed the numbers working in hospitals in the next decade (**FIGURE 7.4**). Offices of health practitioners

FIGURE 7.4 Offices of health professionals were the second most common employer of health professionals in 2013.
© Tyler Olson/Shutterstock

employ primarily health diagnosing and treating practitioners with high levels of education—for example, physicians, surgeons, podiatrists, dentists, physical therapists, occupational therapists, physician assistants, nurse practitioners, psychologists, RNs, and dietitians. Health technologists and technicians that may work in a group practice include dental hygienists and LPNs together with healthcare support personnel, e.g., dental assistants and medical assistants.[3] Offices of health practitioners also includes practitioners of alternative medicine, such as acupuncturists, massage therapists, homeopaths, hypnotherapists, and naturopaths.

Physicians with a group practice may specialize, for example, in obstetrics and gynecology and diseases of women. Dentists may specialize as orthodontists or oral and maxillofacial surgeons. Other practices may specialize in cardiology and include health practitioners in addition to physicians—for example, exercise physiologists, dietitians, nurses, and psychologists. Physical therapists may work in a practice with a chiropractor and athletic trainer and specialize in treating those with sports injuries.

Most offices of health practitioners will be open Monday through Friday for the day shift. However, some offices will be open in the early evening and on Saturdays to accommodate working schedules of their patients.

Nursing and Residential Care Facilities

Nursing homes were almost unknown before the 1930s but have grown rapidly in number since then. By 2013, there were approximately 1.4 million persons residing in nearly 16,000 nursing homes.[5] An additional 1 million individuals resided in 31,000 assisted-living facilities.[6]

Nursing care facilities provide inpatient nursing, rehabilitation, and health-related personal care to those who need continuous nursing care, but do not require medical or surgical treatment. Residential care facilities provide around-the-clock social and personal care to older adults and others who have a limited ability to care for themselves, such as someone recovering from surgery. The services offered vary from skilled bedside nursing to simple personal care (bathing, dressing, meals, and so forth).

Residents in assisted-living facilities require less nursing and personal care than those residing in nursing care facilities. Most assisted-living facilities provide meals and social and recreational activities. Needs of individual residents vary from assistance with some to all activities of daily living such as housekeeping, shopping, meal preparation, bathing, and dressing. However, residents in assisted-living facilities are more independent than those living in nursing care facilities.

In the future, the most growth is expected for healthcare support personnel such as nursing assistants and personal care aides in nursing care facilities.[3] There will continue to be a demand in residential facilities for RNs in the heath diagnosis and treatment practitioner category, and for LPNs in the technical category. Other healthcare workers such as physical therapists, social workers, recreation therapists, and dietitians often work as consultants for several facilities and less often as full-time employees for one facility.

Home Health Care Services

Home health care is expected to grow 60%—faster than any other healthcare industry in the next decade.[3] The development of in-home medical technologies, substantial cost savings, and patients' preference for care in the home has helped change this once-small segment of the industry into one of the fastest-growing healthcare services. Skilled nursing or medical care is provided in the home primarily to older adults, under a physician's supervision. Home healthcare services are provided for patients recovering from surgery or a stroke or for someone receiving treatment for cancer or other conditions requiring ongoing skilled nursing such as treatment of skin wounds.

The majority of healthcare workers in the home-care setting are similar to those who work in nursing facilities—RNs, LPNs, home health aides, nursing assistants, and personal care aides. Depending on the patient's medical condition, other practitioners that may provide services in the home are physical and occupational therapists and assistants, social workers, dietitians, and speech-language therapists. Working schedules for home-care workers are usually flexible since workers often make their own schedules. Most visits are made during the day between 7 AM and 7 PM and may include weekends.[3] Home-care workers are responsible for their own transportation to the homes of clients but may be reimbursed for mileage or other travel expenses.

Outpatient, Laboratory, and Other Ambulatory Care Services

In the past, many medical procedures, including certain diagnostic tests and simple surgeries, 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 will shift employment opportunities from hospitals to other kinds of health facilities. Examples of these services are clinics where patients go to have blood drawn before surgery by phlebotomists, where a pregnant woman has a sonogram done by a diagnostic medical sonographer, or where a patient with cancer receives radiation therapy from a radiological technician.

Outpatient medical and diagnostic laboratories employ clinical laboratory technologists and technicians, radiological technologists, cardiovascular technologists and technicians, diagnostic medical sonographers, nuclear medical technologists, and magnetic resonance imaging

technologists. Healthcare occupations with the most new jobs for this category are RNs in the health diagnostic and treatment category, EMTs and paramedics in the technician category, and phlebotomists in healthcare support. Medical and clinical laboratory technicians and medical assistants will also be in demand in this setting.[4]

Workers usually have a standard 9 AM to 5 PM shift, which may include Saturdays. The exception would be EMTs and paramedics, who work in shifts to allow coverage 24 hours a day, 365 days a year.

Additional Work Settings for Healthcare Workers

Health workers are employed in vital 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 these careers:

- *Orthotists* and *prosthetists* design medical supportive devices including artificial limbs (arms, hands, legs, and feet), braces, and other medical devices.
- Healthcare workers in *blood banks* draw, process, store, and distribute human whole blood and its derivatives.
- *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, and medications in relation to reproductive health and pregnancy care.
- Health education and promotion departments in large corporations and factories conduct group classes, exercise programs, and health screenings for employees.
- *Public health departments* at the city, county, and state level work with medical scientists at the Centers for Disease Control and Prevention (CDC) at the federal level to track outbreaks of foodborne illness or influenza.
- *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.
- *Migrant health programs* provide health services to migrant and seasonal farm workers who would not qualify for health services available to permanent residents.
- *Neighborhood health centers* provide medical, dental, laboratory, radiological, and pharmaceutical and mental health services for people living in a particular geographic area within a city.
- *Voluntary health agencies* concerned with specific health problems or health services raise funds for medical research, alert the public to specific health problems, and provide health education programs. The American Cancer Society, American Heart Association, American Diabetes Association, and the National Foundation–March of Dimes are examples of voluntary health agencies.
- Several branches of the federal government employ a variety of healthcare workers:
  - Occupational Safety and Health Administration (OSHA) enforces standards related to job health and safety.
  - The U.S. Department of Agriculture (USDA) supervises state-sponsored programs to ensure that agricultural products—including vegetables, fruits, meat, poultry, and eggs—are disease-free and processed under sanitary conditions.
  - The U.S. Food and Drug Administration (FDA) monitors the safety of food, prescription drugs, and medical devices.
  - The U.S. Army, Navy, Air Force, and Veterans Administration offer employment opportunities in practically every health occupation described in this book.

EXPLORING HEALTH CAREERS

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 the population changes and greater access to health care with healthcare reform is achieved.

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.

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 communities, employers cannot find enough workers to fill existing healthcare jobs. This national problem is often referred to as the **maldistribution of health personnel**. Healthcare workers are not distributed according to the population or health needs in many geographic areas. Low-income and overpopulated inner-city areas and underpopulated rural areas are hardest hit by this maldistribution.

Shortage areas need health professionals of all kinds. This might mean relocation to find the best future opportunities. The federal government has designated areas in each of the 50 states and territories as **Health Professional Shortage Areas (HPSAs)** based on the number of providers of primary care, dental care, and mental health care. Statistics for communities or areas designated as HPSAs are as follows: more than 6,000 are so designated for primary medical care, over 5,000 for dental care, and over 4,000 for mental health care.[7]

In an effort to increase the diversity of the health professions workforce and the number of providers working in underserved communities, the HRSA of the U.S. Department of Health and Human Services (DHHS) provides funds to accredited U.S. health professions schools. The schools use the money to offer scholarships and low-interest loans to disadvantaged students with financial need. Students who benefit from these programs are often from racial and ethnic minorities underrepresented in the health workforce, such as African Americans, Latinos, and American Indians and Alaska Natives—groups that together comprise 25% of the U.S. population, but represent less than 10% of many health professions.[8]

Scholarships and loans are administered through the **National Health Service Corps (NHSC)**. Scholarships are available for students planning a career in primary care including nurse practitioners, physician assistants and dentists.[9] Loans are offered under three separate programs: (1) *State Loan Repayment Program*, available in 30 states for students in a variety of healthcare training programs; (2) the *National Health Student Loan Repayment Program* for those already practicing in primary care, dentistry, and behavioral health and making a two-year commitment; and (3) the *Student to Service Loan Repayment Program* for medical students beginning in the last year of medical school in exchange for serving three years in urban, rural, or frontier communities with limited access to primary care.[9]

Career Exploration—the Process

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. Some helpful strategies include:

- 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 offer continuing education programs? Does it subscribe to patient education concepts? What are the general amenities offered to workers in different kinds of facilities?

Before you go exploring, do your homework. View video clips of health professionals available on the websites listed at the end of this chapter, as well as the websites of professional organizations. Do some more reading in the library. Be prepared to ask pertinent questions that will help you make decisions.

Also, visit schools that offer majors in the health careers. You can find out much about the professions by talking to students and instructors and by spending some time on campus and possibly in classes (most schools permit such visits). Another way to learn more about health careers is to join student health professions organizations in high school or community college.

Some professions stipulate that students have some experience in the field before they are considered for admission to an academic program. Experience 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 make decisions about your career, but may also help you get into the school of your choice. For example, if you are considering a career as a registered nurse, consider working as a nursing assistant, or in a hospital lab if you are considering a career as a lab technician.

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

Selecting a School

Next to choosing a career, selecting the right school for training is the most important career decision you will need to make. As you read the job requirements for the many careers detailed in Parts III, IV, and V of this text, you will discover that health career training is available in many kinds of schools, including two 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 two important questions: (1) will the school you are interested in prepare you for the career you want? and (2) what will be the cost of your education, and what are the sources of financial support? The section on *Additional Resources* at the end of this chapter lists accredited programs for the health

professions. Before you seek the answer to this question, you should understand three basic terms related to employment in the health field: licensure, certification, and registration.

Licensure, Certification, and Registration

Obtaining and maintaining **licensure** or in some professions, **certification**, is necessary to practice legally in individual states. Obtaining continuing education hours within a specified time period—for example, every two years—is required to maintain licensure or certification.

Licensure

Before you can work in many health professions, a state license is legally required. The qualifications for licensure vary. In general, a student must graduate from a school that has a program approved by the state licensing agency, and 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 within each state, and individual state licensing requirements for each profession also vary by state. Some professions, such as registered nurse, practical nurse, physician, dentist, optometrist, podiatrist, pharmacist, social worker, and veterinarian, are licensed in all states. The state's Education Department, Department of Higher Education, and Department of Health are usually the agencies responsible for testing and issuing licenses. A state agency and a specialty board, such as the Board of Nursing or the Board of Dentistry, may also grant licenses jointly.

Certification

Professional certification is voluntary for individual health professionals and ensures the employer and the public that a health professional meets an established level of competence in their field. Certification is granted by national professional organizations and is recognized in all states. In health professions for which there is no state licensure, professional certification may be required for employment. However, 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 that is recognized by the profession. Usually this means graduating from an accredited (approved by the professional organization) program. After graduation, the student must pass a special certification examination.

Registration

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

HEALTH CAREERS: SOMETHING FOR EVERYONE

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

- Do you like to work with your hands? Dental technicians, ophthalmic technicians, biomedical equipment technicians, orthotists and prosthetists, and many other health professionals work with their hands.
- Are you interested in working with machines? Respiratory therapists and radiologic technologists are examples of professionals who work with patients and medical machines.
- Are you an artist, musician, or professional dancer? Does sharing your art with individuals or small groups of people appeal to you? Combining a career in the arts and psychotherapy may be the career for you.
- 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.

These careers 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 the following:

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. You can work in health care in research, health planning and administration, health education, disease prevention, environmental protection, and other important areas. 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 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 healthcare jobs, but many others do not emphasize these subjects. Health education and mental health are just a few areas where psychology and the social sciences are stressed. However, even when science and math are needed, different levels of skills are required. Some occupations such as optometrist

and medical 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 eight or more years of preparation. Professional occupations, such as physicians and surgeons, dentists, occupational therapists, social workers, and physical therapists, require a graduate degree. Many health occupations require two or fewer years of preparation to practice. For example, RNs may enter through an Associate's degree or diploma program.

Training costs too much.

The cost of training must be balanced against what one can earn. Figures show that lifetime earnings generally increase with years of education. Most students today need and can find financial aid for training. Scholarships, loans, and loan repayment programs are available to students who are willing to make a commitment to working in underserved areas. The Health Resources and Services Administration (HRSA), National Health Service Corps (NHSC), and the **Indian Health Services (IHS)** provide financial assistance in the form of scholarships, loans, and loan repayment for students who agree to serve in the designated HPSA or with the IHS for a specified period, usually two to three years depending on the amount of the loan. More details about financial assistance is listed under *Additional Information* at the end of this chapter.[9–11]

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 that 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 did not explore alternatives when their first career choice was not possible. A prime example is the aspiring physician who is not admitted to a medical or 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.

USING THIS BOOK TO SELECT AND PLAN A HEALTH CAREER

Parts III, IV, and V 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 chapters on health careers describes the work and the work environment, 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 healthcare field.

Appendix A lists annual salaries for many health professions and 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 résumés, and successful interviewing.

ADDITIONAL INFORMATION

The U.S. government and professional organizations involved in education and training programs in the health professions are excellent resources for students exploring health careers. General information on health careers is available from:

- American Medical Association/Health Professions Career and Education Directory, 515 N. State St., Chicago, IL 60654. Internet: http://www.ama-assn.org/go/alliedhealth
- Bureau of Health Professions, Room 8A-09, 5600 Fishers Ln., Rockville, MD 20857. Internet: http://bhpr.hrsa.gov

Video clips describing a variety of health careers are available from government and nonprofit websites:

- Career Videos for Health Science. One-Stop Career System Multimedia Career Video Library. U.S. Department of Labor. Employment and Training Administration. Internet: http://www.careerinfonet.org/videos/COS_videos_by_cluster.asp?id=27&nodeid=28
- ExploreHealthCareers.org. American Dental Education Association. Internet: http://explorehealthcareers.org

Students interested in pursuing a medical career should contact:

- Association of American Medical Colleges, 2450 N St. NW, Washington, DC 20037. Internet: http://www.aamc.org/students

For a list of accredited programs for dentists, dental hygienists, and dental assistants:

- Commission on Dental Accreditation, American Dental Association, 211 East Chicago Avenue, Chicago, IL 60611. Internet: http://www.ada.org/en/coda/find-a-program/

For a list of accredited programs in allied health fields, contact

- Commission on Accreditation of Allied Health Education Programs, 1361 Park St., Clearwater, FL 33756. Internet: http://www.caahep.org

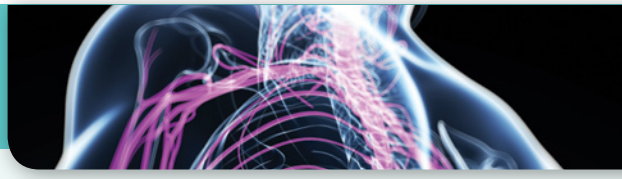
Financial aid in the form of scholarships, loans, and loan repayment programs for healthcare workers in underserved areas is available from:

- Health Resources and Service Administration (HRSA). *Loans and Scholarships.* Internet: http://www.hrsa.gov/loanscholarships/index.html
- Indian Health Service (HIS). *Loan Repayment*. Internet: http://www.ihs.gov/careeropps/loanrepayment/
- National Health Service Corps (NHSC). *Loans and Scholarships.* Internet: http://www.hrsa.gov/loanscholarships/index.htm

Scholarships and loan repayments for disadvantaged students:

- Health Resource and Service Administration (HRSA). *Loans for Disadvantaged Students*. Internet: http://bhpr.hrsa.gov/scholarshipsloans/programs/lds.html
- Health Resources and Service Administration (HRSA). *Scholarships for Disadvantaged Students*. Internet: http://bhpr.hrsa.gov/scholarshipsloans/programs/sds.html
- Indian Health Service (HIS). *IHS Scholarship Program*. http://www.ihs.gov/scholarship/

LEARNING PORTFOLIO



Study Points

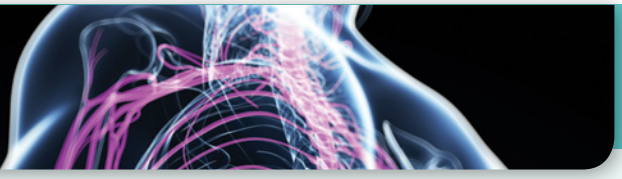
1. Desirable traits for healthcare workers are patience and empathy and the ability to work with people from diverse backgrounds under stressful situations.
2. The healthcare industry provides a variety of careers requiring different levels of education, from a high school diploma to post-secondary training to a two-year associate's degree, four-year bachelor's degree, or six to eight years of graduate school.
3. In general, salaries are higher for healthcare practitioners and technical occupations that also require more education.
4. The expected growth for healthcare and personal assistance careers in the next decade is close to 50% compared to 11% for all other occupations.
5. The high demand for healthcare workers is related to the aging population requiring health care and personal assistance, more people with health insurance as a result of the Affordable Care Act, and the aging of the workforce,
6. The fastest growth and highest numbers for healthcare workers are for home health aides and personal care assistants.
7. The majority of healthcare workers are employed in hospitals, offices of health professionals (for example, a group practice of physicians or physical therapists), and in nursing and residential facilities, including assisted-living facilities. In the next decade, more healthcare workers are expected to work in offices of health professionals, outpatient laboratory and ambulatory centers, and in home care instead of hospitals.
8. The concentration of healthcare workers is in urban areas resulting in maldistribution of healthcare workers and a shortage of primary care providers (physicians, physician assistants, and nurse practitioners), dentists, nurses, and mental health clinicians in rural areas and the inner city designated as Health Professional Shortage Areas (HPSA). The National Health Service Corps (NHSC) and the Indian Health Service (HIS) provide scholarships, loans, and loan repayment opportunities for students in exchange for working in these areas for at least two years.
9. Two important questions for students to answer when exploring a health career are: Will the degree program prepare me for the career that I want? What financial resources are available for obtaining the training or degree?
10. Most health careers require either state licensure or certification to legally practice within a state. Requirements to become licensed are completion of a training or educational program and successfully passing a licensing exam. Certification is granted by professional organizations and requires completion of an accredited education program and successfully completing a qualifying exam. Certified employees are more competitive in a tight job market.

Issues for Discussion

1. Review the requirements for becoming a dentist, dental hygienist, and dental assistant. Review dental careers in Chapter 12 and other resources to find out the educational requirements for each career. Compare the requirements for preparing for these three careers in terms of length of training, cost of training, job opportunities, and lifetime income. Which of these dental careers best matches your career goals?
2. Select two health careers that you are interested in pursuing; for example, massage therapist and physical therapist. Search for an educational program for each to determine the entrance requirements. What advice would you give a high school student to prepare for each career to improve their chances of being admitted to the program?
3. Go to the National Health Service Corps Job Center website (http://www.nhsc.hrsa.gov) to review jobs available to students who make a commitment to work in a Health Professional Shortage Areas (HPSA) in exchange for school loans. Are there jobs in your state? Are there locations that you are interested in pursuing?
4. View the video of the oldest working nurse in the United States who turned 90 and is still going! (Internet: https://www.youtube.com/watch?v=9JtriJkFmm0&sf39953848=1). Discuss the desirable qualities of healthcare workers. Describe some of these qualities of the nurse shown in the video.

Enrichment Activities

1. Read the stories of a father and his daughter who both served in the National Health Service Corps (NHS). Read their stories at NHS *Member Stories*. (Internet: http://www.nhsc.hrsa.gov/corpsexperience/memberstories/arthursuzannefournier/index.html).



LEARNING PORTFOLIO

2. Review videos of members who have served in the NHS (Internet: *Member Stories: Videos.* http://www.nhsc.hrsa.gov/corpsexperience/memberstoriesvideos/index.html).
3. Go to the website ExploreHealthCareers.org (http://explorehealthcareers.org) and review student profiles and professional profiles to learn more about different careers and how students overcame challenges of preparing for a health career.

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CHAPTER 8

Career Development

Objectives

After studying this chapter, the student should be able to:

- Understand what areas of study comprise the common core of knowledge.
- Explain the role of professionalism in a health career.
- Distinguish between ethics and confidentiality requirements.
- List legal issues that arise in health care.
- Recognize the need to continually learn one's chosen profession.

Key Terms

Abuse
Accreditation
Anatomy
Career development
Certification
Code of ethics
Communication
Confidentiality
Conflict of interest
Continuing education
Disparagement
Documentation
Ethics
Fraud
Health record
Health team
Healthy behavior
Infection control
Licensing
Malpractice
Medical math
Medical terminology
Negligence
Physiology
Professional
Professionalism

Introduction

Often students who are choosing careers focus on the immediate future—what is needed today in order to become the professional of tomorrow. Career development includes that initial focus but stretches beyond it. **Career development** refers to an organized planning method used to form an individual's work identity. An example of the many considerations involved in career development is seen in FIGURE 8.1.

CAREER DEVELOPMENT

In developing one's career, an individual must understand what must be studied and understood to become successful initially and over time. The individual must consider all aspects of professionalism, including those involving ethics and confidentiality. Because some healthcare professionals have derailed their careers by acting in a negligent manner with patients, healthcare practitioners must understand legal issues affecting themselves and the patients with whom they interact. Healthcare practitioners must understand not only the need but the mechanisms for continuing their education so that they may learn the most recent information in their field. How these concerns have played out for one healthcare practitioner is the subject of the professional profile in this chapter.

COMMON CORE KNOWLEDGE

Health care is a dynamic and complex field that requires training in not only the sciences but also in the intricacies of interpersonal skills. In completing their training and in performing their careers, healthcare professionals share a common core of knowledge. Because entire courses are devoted to the following subjects, they are described briefly as a way of introduction to the common core of knowledge.[1]

FIGURE 8.1 There are many factors that can impact career development in a positive way.
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Medical terminology refers to the language used in medicine that allows healthcare professionals to communicate with each other. Courses in medical terminology involve identifying medical terms and words by their component parts, defining the body's structures and its systems, and understanding body orientation, health, wellness, disease terms, and appropriate medical abbreviations and symbols. Upon mastering the subject, healthcare professionals can communicate with precision and accuracy about the medical issues associated with their patients.

Anatomy and physiology (A&P) are courses common to the healthcare professional curriculum. **Anatomy** refers to the structure of organisms and their parts. **Physiology** focuses on how organisms and their parts carry out the normal physical functions that allow them to exist. Often taken in combination or sequentially, A&P courses provide a comprehensive understanding of how the human body works and allows professionals to describe diseases and disorders of each body system.

Technical skills are part of every curriculum in healthcare specialties that involve direct patient contact. Students typically learn procedures for measuring and recording vital signs. They commonly learn first aid, cardiopulmonary resuscitation (CPR), how to use an automated external defibrillator (AED), and how to clear a foreign body airway obstruction (FBAO). They learn additional technical skills depending on their career specialty.

Safety is of paramount importance in health care, including to patients, visitors, and healthcare providers themselves. **Infection control** deals with preventing the spread of healthcare-associated infections. The focus rests on preventing or halting the spread of infection within the healthcare setting, whether that spread is between patients, between patients and healthcare providers, or among healthcare providers. Once an infection is present, focus rests on monitoring its spread in the healthcare setting and managing the outbreak.

Safety also refers to applying procedures and protocols to reduce the potential for bodily injury. Healthcare students learn about body mechanics and the proper ways in which to move patients so as to avoid injury to patients and themselves.

Professional Profiles

Name: Amanda, RN
Title: Charge Nurse
Education: ADN; enrolled for BSN

Q: Tell us about your career progression.

A: After graduating from nursing school, I hired on at a local hospital with 113 beds and soon after found myself a charge nurse on a 31-bed high acuity telemetry unit. Diagnoses of our patients varied from congestive heart failure, myocardial infarction, cardiomyopathy, and many chest pain rule outs that resulted in other various outcomes.

I recently took a position on a 40-bed medical floor as a free charge nurse. My job now allows me to focus on the hospital's quality indicators and outcomes. I get to round on patients in the morning to determine the needs of my colleagues and the floor. I love the role I am currently in because I can advocate for patients by discussing the care they are receiving and learning ways to improve our delivery.

Q: What challenges you about your profession?

A: Nursing has been a very challenging yet fulfilling career for me. It has allowed me to develop a professional skill set, build relationships with patients, and learn on a daily basis from my peers. I have recently become engaged in community events while sitting on the Young Professional Advisory Board in my county. I have had many great opportunities while working as a registered nurse and look forward to many to come.

Q: How have you demonstrated professionalism in your career?

A: Over the years, my career has presented me with many opportunities to grow as a professional. The hospital has a clinical development program that allows nurses to put together a portfolio representing their work over time. There are many requirements including service in the community, continuing education, awards or recognition from patients, and participation in committees or improvement events that take place in the hospital. Developing this portfolio and committing to the work that it entails encourages me to view my job as a nurse as something much more. Nursing is a profession and has been elevated to that over time. As a nurse, I feel it's my obligation to continue to engage myself into my community and help represent what the profession of nursing is.

Q: Without disclosing protected health information, describe an ethical challenge you've faced and how have you addressed it.

A: As a nurse I often am witness to ethical dilemmas within the acute care setting. When taking care of an elderly patient who had decided to go on hospice, I witnessed many family members who came in to visit who were not in agreement with the patient's decision. Over the course of a few days the patient had become very weak and unable to communicate. Many family members began to demand that the decision to start hospice care be reversed and that [hospital staff] resume treatment for the patient's cancer. When involved in caring for large families and patients with terminal illness, it is important to advocate for the patient. At times, it can be emotionally taxing, and your own beliefs may not agree with those of the patient; however, it's important to keep your own beliefs out of it. Ultimately, in this particular situation, my patient had paperwork that reflected his wants and needs for end-of-life care. He had made a decision to die peacefully, and my job was to allow him just that. We called a chaplain in to comfort the family and help them understand that the patient was clear about his wishes. In this case, the family just needed support to accept his wishes. Death is hard for all parties involved, but as a nurse, my first priority was advocacy for my patient.

Q: Describe the continuing education requirements for your profession.

A: Continuing education is mandated each year and can be different from unit to unit. My floor must participate in a skills lab that ensures that we are proficient in a number of clinical skills. We must also obtain eight hours of continuing education hours that we can do online or take classes within the hospital. Throughout the hospital, there are multiple types of equipment to safely transfer patients who need assistance with ambulation, so every year we have to demonstrate proficiency in safe patient handling. It is also mandatory to keep up to date a BLS [basic life support] card and in some areas ACLS [advanced cardiac life support].

Most learn about the proper use and disposal of body fluids, pharmaceutical products, dressings, syringes, needle sticks, lancets, and hazardous materials. Proper methods of sterilization, such as using liquid or solid cleaning solutions, are learned and employed in the school and work settings. Also offered are training on emergency procedures and protocols in the event of a fire or other disaster and compliance with safety techniques in the work environment.

Math courses are common across the healthcare professions. Frequently referred to as **medical math**, these courses teach students how to apply mathematical computations related to healthcare procedures. Students learn to record time using the 24-hour clock and to analyze charts, diagrams, graphs, and tables to interpret healthcare results. Examples of math used by some healthcare professionals are seen in TABLE 8.1.

Students sometimes express worry about medical math, concerned that it may be too hard to master. The reality is that medical math builds on basic mathematical concepts such as addition, subtraction, multiplication, and division. Students learn to express math results as whole numbers, fractions, degrees, angles, decimals, ratios, and percentages. Students learn to convert between systems of measurement, such as metric, household, and apothecary, and between Fahrenheit and Celsius. The understanding of basic math skills and the ways to express and convert numbers makes it possible for healthcare professionals to perform their duties.

Knowledge of healthy behaviors is central to a healthcare provider's success with patients. A **healthy behavior** refers to an action taken to attain, maintain, or regain good health and to prevent illness. Common healthy behaviors include weight control, exercise, and good sleep habits. Students learn strategies that promote health and wellness and integrate them into their activities with patients. These activities may be seen in outreach programs to the community, screenings for diseases and disorders, and stress management offerings.

TABLE 8.1 Examples of Medical Math Used by Healthcare Professionals

Healthcare Professional	Activities
Administrators	Prepare bills; create budgets.
Diagnostic medical sonographers	Determine angles needed to create a three-dimensional image.
Health information managers	Develop and report descriptive and vital statistics; analyze case mix.
Nurses and aides	Record vital signs; administer medications.
Pharmacists	Calculate medication dosages.
Psychologists	Analyze diagnostic surveys and studies.
Technicians and therapists (laboratory, occupational, physical, radiation, and respiratory)	Perform tests; record results.

Communication refers to the sharing of information between two or more people as a way to convey meaning. Healthcare professionals must communicate with and relate to a wide variety of individuals, including patients, family members and visitors, other members of the healthcare team, administrators, and on occasion, vendors. Honing active listening skills, which focuses on what the speaker is saying, is a requirement of a successful healthcare professional.

Communication includes more than verbal skills, but also the ability to write and effectively present information. Writing in health care frequently refers to documenting in the patient's health record. A **health record** is an ordered set of documents or a collection of data that contains a complete and accurate description of a patient's history, condition, diagnostic and therapeutic treatment, and results of treatment. Health records are considered the primary source to document patient care and to communicate between the healthcare team. The process of entering this description is referred to as **documentation**. The documentation process may consist of traditional paper, an electronic health record, or a hybrid of both.

The manner in which health care is delivered to patients is commonly taught to healthcare students. Many different healthcare delivery systems exist, including governmental, nonprofit, for-profit, public, and private. Each of these systems influences how care is delivered by healthcare providers and paid for by insurers, the government, and patients. Students study healthcare economics and common methods of payment, the structure and relationships of healthcare systems, and the responsibilities of consumers in the healthcare system.

Students also study the impact of emerging technologies in health care. They learn about new technologies that affect their ability to care for patients. They learn basic computer concepts, terminology, and skills and what is considered appropriate use of social media and email in the healthcare workplace. They learn about electronic health records, the data that is entered into them, and the fundamentals of securing that data from unlawful access.

PROFESSIONALISM

To sustain their careers over time, healthcare practitioners must be prepared to act in a professional manner at all stages. A **professional** is a person with specialized learning who is engaged in a specified activity as an occupation. Those professionals who specialize in the healthcare realm are referred to as healthcare professionals. **Professionalism** refers to the conduct, character, skill, and judgment of a trained person. Healthcare professionals who act in an accountable and ethical manner in the workplace

and maintain a steady composure in the face of adversity demonstrate professionalism.

The manner in which healthcare professionals conduct themselves on the job influences the confidence patients have in the care they receive. Placing the patient's welfare first and treating everyone with common courtesy are signs of a professional attitude. Similarly, dressing and looking like a professional is often seen by patients as a sign of respect. A critical feature of professionalism is the achievement of a high level of skill in the discipline in which the healthcare provider is trained. Maintaining a healthy balance between caring for patients without becoming emotionally attached is essential to a professional approach to delivering health care.

The professional manner in which healthcare providers conduct themselves on the job also influences their opportunities for advancement. Those individuals who merely "do their job" without any further commitment limit their opportunities for promotion. By contrast, those individuals who contribute positively to the workplace through interaction with their patients and coworkers and address work-related problems as opportunities to demonstrate problem-solving skills present themselves as good candidates for advancement. Performing at the highest professional standards positions an individual for further progress in his or her career.

Ethics

Ethics refers to the formal study of moral choices that conform to standards of conduct. In the simplest sense, it means making judgments between right and wrong or listening to one's conscience. Many of the concepts included in any discussion of ethics in the healthcare field are listed in FIGURE 8.2.

Ethics are interwoven into the professional lives of healthcare professionals, and many situations these individuals face pose ethical dilemmas. Situations can arise at any time, ranging from the time before an infant is born to the time a patient dies. Healthcare providers are aided in dealing with these situations not only by their internal compass, but by professional codes of ethics. A **code of ethics** refers to a written list of a profession's values and standards of conduct. In the healthcare context, these codes of ethics promote the welfare of patients and the delivery of high quality patient care.

Codes of ethics have existed for thousands of years. The best-known code is the Hippocratic Oath, an ethical code typically taken by physicians who are about to start their medical practice. This oath contains many of the values that form the basis for codes of ethics of many professional healthcare associations: acting to benefit the patient, refusing to do harm to patients, and maintaining patient confidences.

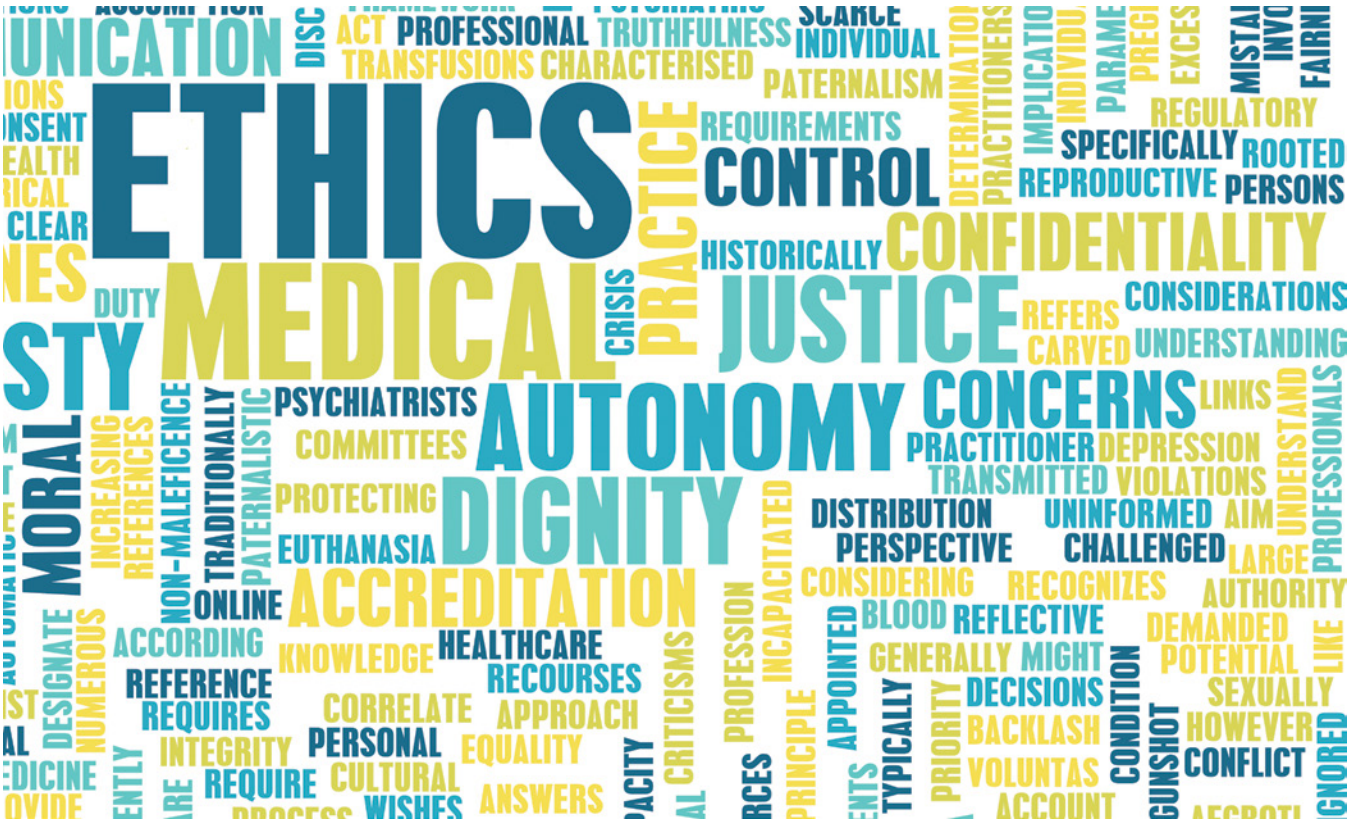

FIGURE 8.2 Having a strong code of ethics helps promote the welfare of patients and the delivery of high quality patient care.

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Virtually every professional healthcare association has issued a code of ethics and members of those associations are bound by the terms of those codes.

Many codes of professional conduct address the issue of disparagement, a form of professional misconduct. **Disparagement** refers to belittling or criticizing the skills, knowledge, or qualifications of another professional. It is often seen in the form of personal attacks upon a fellow professional instead of a focus on the merits of the issue under consideration. Healthcare practitioners who exercise care to avoid disparagement increase the possibility of persuading others of the merits of an issue and avoid accusations of professional misconduct.

Similarly, many codes of ethics address the issue of conflict of interest. A **conflict of interest** means a clash between an individual's selfish interests and his or her obligations to an organization, group, or person. Conflicts of interest arise when the healthcare practitioner places his or her interests ahead of the patient's interests. For example, sexual relations between a healthcare practitioner and a patient are seen as conflicts of interest because the healthcare practitioner has advantage over the patient in terms of knowledge, power, and status. Such advantage results in a power imbalance, making true consent impossible to measure and raising questions of ethically inappropriate conduct.

Ethical issues may impact the safety and welfare of patients, and when they do, healthcare professionals are obligated to address those issues. For example, healthcare practitioners who experience substance abuse problems place their patients' safety at risk. Healthcare practitioners who recognize a fellow colleague impaired by substance abuse have an obligation to act. In doing so, the healthcare practitioner should follow the guidelines and policies of both their professional association and their employer.

When a patient, visitor, or other member of the healthcare team suffers from an adverse incident, the healthcare provider may create a report that documents the circumstances of the adverse incident, including the condition of the subject and observations of the incident. Healthcare providers may address ethical issues with committees within their healthcare institution who are charged with assisting in resolving complicated ethical problems that affect the care and treatment of patients. They may consult the code of ethics of their professional association for guidance.

Ethical practice also includes addressing cultural, social, and ethnic diversity. Healthcare professionals need to demonstrate respect for religious and cultural values related to health care that differ from their own. They need to demonstrate civility and empathetic treatment to all patients with whom they come in contact, regardless of their ethnicity, race, religion, or gender.

Confidentiality

One of the most vital aspects of professionalism deals with confidentiality of patient information. **Confidentiality** refers to the healthcare professional's obligation to maintain patient information in a manner that will not permit dissemination beyond the healthcare provider. A major fear of patients is that they will become the subject of gossip or social conversations among healthcare providers overheard by others. Healthcare professionals are taught to only discuss patient confidential information with those medical personnel who are involved in treating the patient. Professionals know not to make comments in public areas about patient information.

Healthcare professionals who breach confidentiality not only damage their relationship with the patient, they may also violate the law and professional requirements. Each state has laws addressing patient confidentiality and allows for lawsuits against those who breach those laws. At the federal level, regulations issued pursuant to the Health Insurance Portability and Accountability Act (HIPAA) establish many confidentiality restrictions, identify what constitutes improper disclosure of protected health information, and address fines and other penalties that may be imposed if confidentiality is violated. Additionally, most regulatory and licensing bodies that govern the health professions have similar requirements and healthcare professionals who violate those requirements may face discipline, including removal of their license to practice in the healthcare field. Finally, professional associations to which healthcare providers belong publicize codes of ethics that contain confidentiality restrictions and healthcare providers risk discipline, including expulsion, from those associations for violating patient confidentiality. The relationship between and among confidentiality, law, licensing, and professional codes of ethics is seen in FIGURE 8.3.

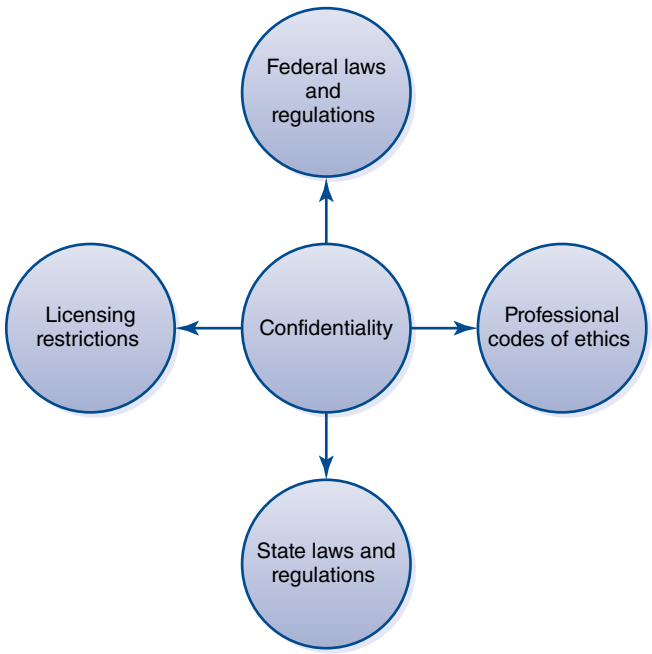

FIGURE 8.3 Relationship of confidentiality with law and ethics.

Healthcare Teams

The concept of **health teams** in all types of health services has brought about changes in healthcare 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. Team members are usually doctors, nurses, dietitians, therapists, and other direct-care providers. Functional teams are formed to take care of specific problems. Examples include the mental health team or the coronary care team. Patient-centered teams include patients and their families who are involved in making healthcare decisions together with their doctor and other healthcare professionals. Medical technologists, radiologic technologists, and pathologists may form a backup 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, costs, quality, and availability of services. This healthcare team is composed of public health agents, hospital administrators, health information managers, 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.

LEGAL ISSUES IN HEALTH CARE

In terms of career development, the focus rests on two main legal issues: obtaining the legal right to practice in a particular health profession and staying out of trouble that might result in a lawsuit.

Right to Practice

Once an individual completes his or her course of study, he or she generally feels competent to set off into the workforce. Like other professions, those involved in health care are highly regulated, meaning that in order to practice a given health profession, an individual must determine if they need a license or certification.

Licensing refers to a right conferred by a governmental body to practice an occupation or provide a service. Each state decides what professions to license; occupations commonly subject to licensure include medicine; podiatry; pharmacy; nursing; occupational, physical, and respiratory therapy; and osteopathy, among others. Licensing serves as a way to control the number of individuals who practice a particular calling. To be licensed, one generally must present proof of specialized education and pass an examination administered by the appropriate state board. If one practices a given profession without a license, the individual does so at his or her own risk, because that practice is considered illegal under state law.

The licensing process extends beyond individuals to healthcare facilities. State regulatory bodies have developed basic minimum standards for healthcare facilities to meet in order to obtain and maintain a license to operate. In addition, healthcare facilities often seek accreditation status. **Accreditation** refers to the process by which an external entity reviews an organization or program of study to determine if the organization or program meets certain predetermined standards. Healthcare facilities are motivated to achieve accreditation status because this status is linked with the ability to receive financial reimbursement for services and recognition of the delivery of high quality services.

Certification refers to the action or process of providing an individual with an official document attesting to their status or level of achievement. In contrast to licensure, certification is conferred by private organizations and not state governmental bodies. To become certified, an individual must pass an examination administered by an accredited body that monitors and upholds prescribed standards for the industry involved. Occupations commonly subject to certification include addiction or behavior specialists, health information administrators and technicians, mental health aides, and home health aides, among others. Individuals without certification who attempt to practice in professions that commonly require certification may experience trouble getting a job; however, practicing without certification generally does not violate state law.

Avoiding Lawsuits

Lawsuits are a hallmark of American life because they attempt to resolve disputes that were not resolved by other means. Healthcare professionals are subjects of lawsuits for a number of reasons.

The most common accusation leveled in a lawsuit against a healthcare practitioner is malpractice. **Malpractice** refers to professional misconduct. Numerous forms of malpractice exist but the most common type is negligence. **Negligence** refers to someone failing to do something that a reasonably prudent person would do in the same or similar situation, or alternatively, doing something that a reasonably prudent person would *not* do in the same or similar situation. Negligence is characterized by carelessness, inattentiveness, or neglectfulness as opposed to intentionally trying to cause harm. Four elements constitute a negligence claim and the individual bringing the lawsuit must prove all elements to succeed, absent a successful defense. These elements are listed in FIGURE 8.4.

Numerous forms of negligence exist. Perhaps a sponge was left inside the patient following surgery. In the regular course of surgery, a foreign object would not be left in the patient. In that instance, the patient could sue under the legal theory of *res ipsa loquitor*, meaning the thing speaks for

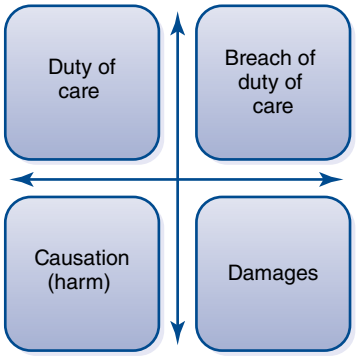

FIGURE 8.4 Elements of a negligence claim.

itself. An example of a foreign body left in a patient is seen in **FIGURE 8.5**. Alternatively, a healthcare provider may not observe confidentiality restrictions and improperly disclose protected patient information to someone not treating the patient. In that instance, the patient could sue for breach of confidentiality. Then again, a psychologist may fail to take steps to protect an innocent third party from a dangerous patient.[2] In that instance, the injured third party could sue for failure to warn. In each of these examples, the healthcare provider possessed a duty of care that wasn't properly exercised (the breach) and caused harm to another person resulting in damages.

Not all forms of malpractice are nonintentional; some are arguably committed by healthcare professionals with the intent to cause harm. For example, a physician may act in a manner beyond that to which the patient originally agreed or consented, such as performing a mastectomy when the patient only agreed to exploratory surgery.[3] In that instance, the patient could sue for technical battery. Alternatively, a physician may unilaterally end a relationship with a patient without giving notice when the patient continues to need care.[4] In that instance, the patient could sue for medical abandonment.

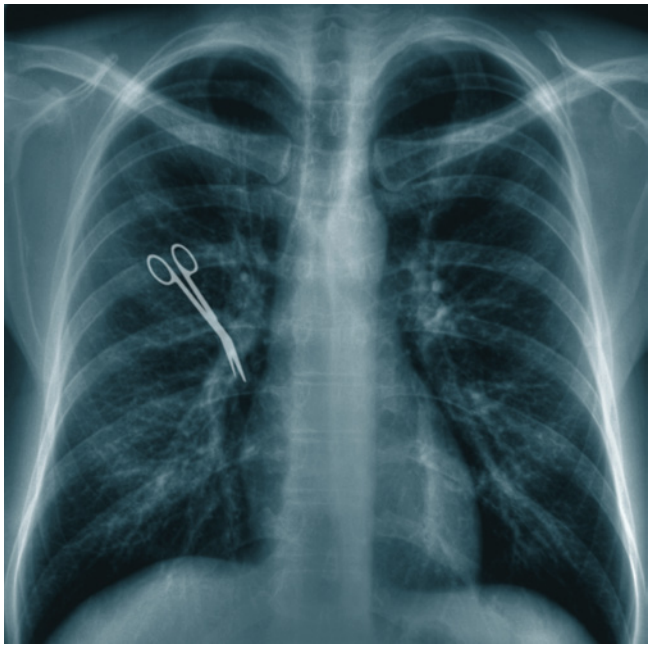

FIGURE 8.5 X-ray image with scissors.
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Another possibility for a malpractice lawsuit involves the use of social media. Healthcare professionals must exercise care in using blogs, online forums, wikis, chat rooms, and similar forms of social media. For example, a healthcare professional may dispense inadequate medical advice based on material received through social media that is not as thorough as what may have been gathered in a face-to-face encounter, thereby reducing the healthcare provider's understanding of the patient's condition. In that instance, the patient could sue for negligence. Alternatively, a healthcare provider may respond to a patient's social media inquiry with patient-specific, protected health information but not do so in a secure fashion, such as using encryption technology. In this instance, the patient could sue for breach of confidentiality. Finally, a healthcare professional may treat patients through social media who do not reside in the same state in which the professional is licensed. Most states issues licenses that are limited to practice within a state's boundaries. In that instance, the patient could sue for the unauthorized practice of the healthcare practitioner's profession.

While many lawsuits involving health care focus on treatment of the patient, some lawsuits focus on administrative matters. Fraud and abuse are the most frequently alleged legal issues related to administrative matters in health care. **Fraud** refers to the intentional deception of another person to that person's detriment. **Abuse** refers to a pattern of practices or customs that are unsound or inconsistent with ethical business, fiscal, or healthcare practices or customs. Actions involving fraud and abuse cover a wide range, including misrepresentation in the marketing of pharmaceuticals and failure to submit medical device reports to the Food and Drug Administration. These actions may also include filing false cost reports to Medicare, conspiracy to fraudulently bill Medicare or Medicaid, or payment of bribes. Lawsuits alleging fraud and abuse are often brought by a governmental entity or an insurance company against the healthcare practitioner.

Each of these examples illustrate how healthcare professionals have experienced legal trouble and been sued for some form of malpractice or allegations of fraud and abuse. While not every lawsuit can be avoided, healthcare practitioners can reduce the chance they will be sued by exercising care in treating patients, complying with acceptable standards of care, and taking only those actions they are authorized to take by state law.

CONTINUING EDUCATION REQUIREMENTS

Because the healthcare field evolves so rapidly and frequently, healthcare professionals are called upon to learn the most recent information in their professional field. Additionally, state licensing boards and professional associations may require the healthcare professional to continually learn. The process by which a professional seeks recurrent learning activities and training beyond that required for the initial license or certificate is referred to as **continuing education**. Continuing education is seen as an integral part of career development and an example is shown in FIGURE 8.6.

Continuing education can take many forms. An individual may take a degree credit course, may pursue non-degree career training, engage in sponsored workforce training or experiential learning, or participate in self-directed learning. In each instance, the individual may be trying to better their understanding, improve their technique, or learn a new skill or technology. This form of growth can in turn be applied to the delivery of patient care.

Additionally, the individual may seek to meet the requirements of their state licensing board or professional association. In those situations, the licensing board or professional association possesses authority to decide how much continuing education is required over a specific period of time in order to maintain or renew a license or credential, which forms of continuing education they will recognize as acceptable, and how the individual must report or show evidence of meeting the continuing education requirement. Failure of healthcare professionals to meet the established requirements may result in jeopardizing their licenses and certifications to practice their profession.

FIGURE 8.6 Continuing education is a part of career development.
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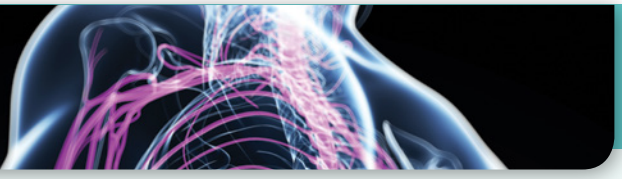
SUMMARY

Career development is a continuum. It extends beyond the common core of knowledge needed initially to enter into a healthcare profession and lasts through all stages of the profession. During the span of a given career, the healthcare professional may encounter difficult situations that require taking action in keeping with ethical norms. They may be faced with concerns over patient confidentiality or the possibility of being sued in court. Additionally, they need to continually learn about their discipline, as health care is a rapidly changing field.



LEARNING PORTFOLIO

Study Points

1. Career development stretches beyond what is needed initially to enter into a healthcare profession.
2. Training for healthcare students includes similarities across disciplines, referred to as a common core of knowledge.
3. Healthcare professionals who act in an accountable and ethical manner in the workplace and maintain a steady composure in the face of adversity demonstrate professionalism.
4. Codes of ethics are common across virtually every healthcare discipline.
5. Healthcare professionals who breach confidentiality not only damage their relationship with the patient, they may also violate the law and professional requirements.
6. Many healthcare practitioners contribute to the successful treatment of patients through health teams.
7. Malpractice is professional misconduct.
8. Continuing education is an integral part of career development.

Issues for Discussion

1. At one time or another, most everyone has encountered someone who has acted in a less-than-professional manner. Discuss with your instructor and classmates examples you have experienced of this phenomenon. Describe what actions you think should have been taken in these examples that could have turned the non-professional situation into a professional situation.
2. Math anxiety has played a role in discouraging persons from pursuing entry into the health professions. Brainstorm with your classmates and instructor the reasons math anxiety exists, considering whether timed tests and the risk of public embarrassment play a role. Discuss what actions can be taken to lessen or eliminate math anxiety.

Enrichment Activities

1. Safety of healthcare professionals is an important function of the job. Research the Internet for the rates of injury to registered nurses, physicians, nurse's aides, dietitians, physical therapists, respiratory therapists, and housekeeping staff. Create a chart comparing the types and rates of injury among these healthcare professionals.
2. Codes of ethics exist in virtually every healthcare profession. Research the websites of any of the professional associations listed in subsequent chapters to see what they include in their code of ethics. Create a chart identifying the similarities and differences between the codes of ethics of various professional associations.
3. Continuing education is usually a central tenet of a professional association. Research the websites of any of the professional associations listed in subsequent chapters to see what types and how much continuing education activity is required over a specified period of time. Create a chart comparing this information for each profession chosen.

References

1. Material related to the common core of knowledge arises from two sources: The National Health Science Standards, National Consortium for Health Science Education (2015) available at: http://www.healthscienceconsortium.org/wp-content/uploads/2015/07/NATIONAL-HEALTH-SCIENCE-STANDARDS-May-2015f1-PE2.pdf and Health Science Alignment – Common Core Mathematics, Department of Elementary and Secondary Education, State of Missouri (2011) available at: http://dese.mo.gov/sites/default/files/HealthSciMath.pdf
2. *Tarasoff v. Regents of University of California*, 529 P.2d 553 (Cal. 1974), *reargued*, 551 P.2d 334 (Cal. 1976).
3. *Corn v. French*, 289 P.2d 173 (Nev. 1955).
4. *Katsetos v. Nolan*, 368 A.3d 172 (Conn. 1976).

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PART THREE

Health Practitioners and Technicians

This section includes the most popular health careers and newer careers as a result of technology, research, changes in reimbursement policies, or greater access to health care. Greater demands are expected for community health workers, substance abuse and behavior disorder counselors, genetic counselors, and advanced practice registered nurses. New specialty areas for physicians are hospitalists and palliative and hospice care.

Objectives

The following objectives are for all chapters in Part III. After studying the chapters in this part, the student should be able to:

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

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Dog: Shutterstock/DuxX; Man in lab: Getty Images/iStockphoto;
Dentist: Shutterstock/foto infot; Spine: Shutterstock/Sebastian Kaulitzki

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CHAPTER 9

Physicians, Surgeons, and Podiatrists*

Key Terms

Advanced practice registered nurse (APRN)
Allopathic physician
American Board of Hospice and Palliative Medicine
American Board of Medical Specialties (ABMS)
American Board of Podiatric Medicine
American Board of Podiatric Surgery
American Osteopathic Association (AOA)
American Podiatric Medical Licensing Exam (APMLE)
Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA)
Council on Podiatric Medical Education (CPME)
Doctor of Osteopathy (DO)
Group practice
Hospice and Palliative Medicine (HPM)
Hospitalist
Liaison Committee on Medical Education (LCME)
Medical College Admissions Test (MCAT)
Medical doctor (MD)
Medical home
Osteopathic manipulative medicine (OMM)
Osteopathic physician
Palliative care
Physician assistant (PA)
Primary care provider (practitioner) (PCP)
Resident physician
Solo practitioner
U.S. Medical Licensing Examination (USMLE)

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

PHYSICIANS AND SURGEONS: THE PERCEPTIONS

Significant Points

- Many physicians and surgeons work long, irregular hours.
- Acceptance to medical school is highly competitive.
- Formal education and training requirements are among the most demanding of any occupation, but earnings are among the highest. Training is typically four years of undergraduate school, four years of medical school, one year of internship and two to seven years of residency and fellowship.
- Job opportunities should be very good, particularly in rural and low-income areas.

Although 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 a career in health care. The title "Doctor" traditionally inspires respect—and perhaps envy. Media portrayal through the years has contributed to a popular perception of doctors as public servants of rare intelligence, compassion, and skill.

Although public perceptions of physicians will undoubtedly persist, 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 healthcare professionals, physicians must adjust to changes in the healthcare system, some of which are potentially constraining to autonomy and earning power.

DOCTORS AND SURGEONS: THE REALITIES

Projected Shortage of Primary Care Practitioners

The demand for physicians is projected to exceed supply by 2020 because of the aging population and greater numbers of Americans having health insurance as a result of the Affordable Care Act (ACA). **Primary care providers** or **practitioners (PCPs)** include physicians, **advanced practice registered nurses (APRNs)** and **physician assistants (PAs)** practicing in family medicine, general pediatrics, internal medicine, and geriatrics. There is also a shortage of PCPs because many physicians train to be specialists who do not see patients for common health problems. The number of APRNs and PAs is projected to grow faster than physicians through 2020; both APRNs and PAs can extend primary care services.[1] Having sufficient numbers of PCPs is important because the U.S. healthcare system requires that referrals to physician specialists be made through PCPs (FIGURE 9.1).

The primary care model includes a **medical home** to provide ongoing preventive care such as health screening

FIGURE 9.1 Pediatricians are primary care providers for children and adolescents.

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and immunizations; treatment of common health problems such as upper respiratory infections and minor injuries as needed; and making referrals to physician specialists for diagnosis and treatment of complex health problems. For example, a PCP might refer a patient with angina—symptoms of coronary artery disease—to a cardiologist to conduct balloon angioplasty or stent placement.[2]

Work Description

Physicians and surgeons diagnose illnesses and prescribe and administer treatment for people suffering from injury or disease. Physicians examine patients, obtain medical histories, and order, perform, and interpret diagnostic tests. They also counsel patients on preventive health care.

There are two types of physicians: **medical doctor (MD)** and **doctor of osteopathy (DO)**. MDs also are known as **allopathic physicians** and DOs are known as **osteopathic physicians**. Although both MDs and DOs may use all accepted methods of treatment, including drugs and surgery, DOs place special emphasis on the body's musculoskeletal system, preventive medicine, and holistic patient care. DOs are more likely to work in primary care, although they can be found in all specialties. About half of DOs practice general or family medicine, general internal medicine, or general pediatrics. Medical school training that is unique to DOs is **osteopathic manipulative medicine (OMM)**, a hands-on approach used to treat discomfort, pain, or limited range of motion from injury or disease. Examples of conditions treated by OMM are headaches, lower back, neck or shoulder pain, and stress or athletic injuries. Some DOs choose an internship or residency program that incorporates OMM, usually a DO residency, Other DOs apply to an MD residency (**FIGURE 9.2**).[3]

Physicians work in one or more of several specialties, including (but not limited to) anesthesiology, family and general medicine, general internal medicine, general pediatrics, obstetrics and gynecology, psychiatry, and surgery. These areas of practice are required rotations for all medical students. Two relatively new specialties—hospitalist and hospice and palliative medicine—will also be reviewed.

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

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

FIGURE 9.2 Osteopathic physicians use manipulation to treat headaches.

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General internists usually treat adult patients. They make diagnoses and provide nonsurgical treatment for a wide range of problems that affect internal organ systems, such as the stomach, kidneys, liver, and digestive tract. Internists use a variety of diagnostic techniques to treat patients through medication or hospitalization. Like family practice physicians, general internists commonly act as primary care specialists. They refer patients to other specialists when more complex care is required. Physicians who train to become specialists usually complete training in general medicine first before applying for a fellowship—for example in endocrinology, neurology, or rheumatology.

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

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

Psychiatrists are the primary mental health providers; they assess and treat mental illnesses through a combination of psychotherapy, psychoanalysis, hospitalization, and medication. Individual psychotherapy involves regular counseling sessions with patients about their problems; the psychiatrist helps patients find solutions through changes in their behavioral patterns, explore their past experiences, and make referral to group and family therapy sessions. Psychoanalysis involves long-term psychotherapy and counseling. In many cases, the psychiatrist prescribes medications to correct chemical imbalances that cause emotional and behavioral problems.

Surgeons specialize in the treatment of injury, disease, and deformity through surgery. Using a variety of instruments, and with patients under anesthesia, a surgeon corrects physical deformities, repairs bone and tissue after injuries, or performs preventive surgeries on patients with debilitating diseases or disorders. The most common preventive surgery is removal of benign or cancerous tumors. Although a large number perform general surgery, many surgeons choose to specialize in a specific area. After completing a general surgery residency, physicians may choose to specialize and complete a fellowship for example in orthopedic surgery, the treatment of the musculoskeletal system. Other specialties include neurosurgery (treatment of the brain and nervous system), cardiovascular surgery, otolaryngology (treatment of the ear, nose, and throat), and plastic or reconstructive surgery. Like other physicians, surgeons also examine patients, perform and interpret diagnostic tests, and counsel patients on preventive health care.

Hospitalists

A relatively new specialty for physicians is that of a **hospitalist**. The professional society for hospitalists, the Society of Hospital Medicine, was established as recently as 1997. According to a survey by the Society of Hospital Medicine, nearly 90% of hospitalists specialize in general internal medicine, with smaller percentages focusing on pediatrics, family practice, and pediatric internal medicine (**FIGURE 9.3**).[4]

Before hospitalists developed into a specialty, physicians admitted patients to the hospital only to make referrals to surgeons or other specialists for treatment. Hospitalists do not have an office practice. Instead, they serve as the single point of contact for a patient moving through the hospital, from the time of admission until discharge. Hospitalists perform medical procedures, design treatment plans, and communicate and coordinate with patients and hospital staff. For the patient, having a hospitalist reduces the confusion of a hospital stay and provides access to a staff member who can answer questions about their condition and treatment options. The hospitalist coordinates with the primary physician to ensure that treatment fits with the patient's medical history and health needs, and keeps the physician updated on the patient's condition. They also may recommend a discharge treatment plan, such as temporary home care, or prescribe medications or physical therapy to ensure a safe transition home. The hospitalist connects patients with resources in their communities that help with recovery or ongoing treatment by referring patients to the hospital's discharge specialists, usually a social worker or nurse, who link patients with rehab centers.[4] Some hospitalists are also responsible for establishing and monitoring patient safety and quality assurance programs in an effort to reduce the length of hospital stays and readmissions.

Hospice and Palliative Medicine (HPM)

Another emerging specialty for physicians is **hospice and palliative medicine (HPM)**. There is a need for physicians trained to counsel patients near the end of life, since 20% of the population is projected to be 65 years of age and older by 2030.[5] This medical specialty focuses on patients with life-limiting or serious health conditions with a goal of managing pain and other symptoms to the greatest extent possible. Hospice has existed in the United States since 1974 and has focused on treating symptoms

FIGURE 9.3 Hospitalists are a single point of contact from admission to discharge from the hospital.
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such as pain, fear, and anxiety associated with a life-limiting illness.[6] **Palliative care** is a relatively new field for physicians and is part of hospice care but also an important part of care to treat symptoms associated with a serious chronic illness. Examples are neurological diseases, such as Parkinson's disease or amylotrophic lateral sclerosis (ALS), which limit the ability to move, talk, or swallow, and eventually result in death; and Guillain-Barré syndrome (GBS), a disease that causes whole-body paralysis and requires a long recovery time.

Referrals are made to palliative care physicians when patients have a severe illness or for patients who are near the end of life. Both hospice and palliative care address the spiritual, emotional, and social concerns of patients as well as those of the patient's family and significant others. A multidisciplinary team of health professionals provide hospice and palliative services in a nursing facility or hospital. Additional sites for hospice services are in-patient hospice centers and in the patient's home.

The **American Board of Hospice and Palliative Medicine** began certifying physicians in HPM in 1996, and 10 years later, the American Board of Medical Specialties (ABMS) and the American Osteopathic Association (AOA) began certifying physicians in this specialty. There are now HPM residency training programs, and as of December 31, 2014, there were 6,952 physicians certified in HPM.[7]

WORK ENVIRONMENT

Many physicians—primarily family practice physicians, general internists, pediatricians, OB/GYNs, and psychiatrists—work in small, private offices or clinics, often assisted by a small staff of nurses and other administrative personnel. Increasingly, physicians are practicing in groups or healthcare organizations that provide backup coverage and allow for more time off. Physicians in a **group practice** or healthcare organization often work as part of a team that coordinates care for a number of patients; they are less independent than the **solo practitioners** of the past. A growing number of physicians are partners or wage-and-salary employees of group practices. Organized as clinics or as associations of physicians, medical groups can more easily afford expensive medical equipment, share support staff, and benefit from other business advantages. Hospitalists usually work for a salary and share shifts with other hospitalists at the same hospital.

Surgeons and anesthesiologists usually work in well-lit, sterile environments while performing surgery and often stand for long periods. Most work in hospitals or in surgical outpatient centers.

Many physicians and surgeons work long, irregular hours. Physicians and surgeons travel between an office and a hospital to care for their patients. While on call, a physician

will deal with many patients' concerns over the phone and make emergency visits to hospitals or nursing homes.

Employment Opportunities

Physicians and surgeons held about 708,300 jobs in 2014; according to Bureau of Labor Statistics in 2014, 36% of physicians in patient care were in primary care: family medicine, pediatrics, internal medicine, and obstetrics and gynecology; 6% were surgeons, and the remaining 58% practiced in other specialties such as oncology, dermatology, and cardiology (TABLE 9.1).

Educational and Legal Requirements

The common path to practicing as a physician is eight years of education beyond high school and three to eight additional years of internship and residency. All states, the District of Columbia, and U.S. territories license physicians.

Education and Training

The minimum educational requirement for entry into medical school is three years of college; most applicants, however, have at least a bachelor's degree, and many have advanced degrees. Although no specific major is required, all students must complete undergraduate work in biology, chemistry, physics, mathematics, and English. Students also take courses in the humanities and social sciences. Some students volunteer at local hospitals or clinics to gain experience in a healthcare setting.

In 2015, there were 144 medical schools in the United States and Puerto Rico, and 17 in Canada accredited by the **Liaison Committee on Medical Education (LCME)**. The LCME is the national accrediting body for MD medical education programs. The American Osteopathic Association accredits schools that award a DO degree; there were 36 accredited osteopathic medical schools in 2015.

Medical schools are highly competitive. Most applicants must submit transcripts, scores from the **Medical College Admission Test (MCAT)**, and letters of recommendation. Schools also consider an applicant's personality, leadership qualities, and participation in extracurricular activities. Most schools require applicants to 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, pharmacology, psychology, medical ethics, and the laws governing medicine. They also gain practical skills, learning to take medical histories, examine patients, and diagnose illnesses.

During their last two years, medical students work with patients under the supervision of experienced physicians in hospitals and clinics. Through rotations in internal medicine, family practice, obstetrics and gynecology, pediatrics, psychiatry, and surgery, they gain experience in diagnosing and treating illnesses in a variety of areas.

Formal education and training requirements for physicians are among the most demanding of any occupation—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 combined undergraduate and medical school programs that last six or seven years rather than the customary eight years. Following medical school, almost all MDs enter a **residency**—graduate medical education in a specialty that takes the form of paid on-the-job training, usually in a hospital. Most DOs serve a 12-month rotating internship after graduation and before entering a residency, which may last two to six years.

TABLE 9.1 Distribution of U.S. Physicians by Specialty

Medical Fields	Percent
Family medicine/general practice	20%
General pediatrics	5%
General internal medicine	8%
Obstetrics and gynecology	3%
Anesthesiology	5%
Psychiatry	4%
General surgery	6%
Other specialties	49%

Data from: Bureau of Labor Statistics, U.S. Department of Labor. *May 2014 National Occupational Employment and Wage Estimates.* Internet: http://www.bls.gov/oes/current/oes_nat.htm[8]

Licensure

All states require physicians and surgeons to be licensed; requirements vary by state. To qualify for a license, candidates must graduate from an accredited medical school, complete residency training in their specialty, and pass written and practical exams. All physicians and surgeons must pass a standardized national licensure examination. MDs take the **U.S. Medical Licensing Examination (USMLE)**. DOs take the **Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA)**. For specific state information about licensing, contact your state's medical board. Although physicians licensed in one state usually can get a license to practice in another without further examination, some states limit reciprocity. Graduates of foreign medical schools generally can qualify for licensure after passing an examination and completing a U.S. residency. For specific information on licensing in a given state, contact that state's medical board.

Certification and Other Qualifications

Certification is not required for physicians and surgeons; however, it may increase their employment opportunities.

MDs and DOs seeking board certification in a specialty may spend up to seven years in residency training; the length of time varies with the specialty. An examination after residency is required for certification by the **American Board of Medical Specialties (ABMS)** or the **American Osteopathic Association (AOA)**. A final examination immediately after residency or after one or two years of practice is also necessary for certification by a member board of the ABMS or the AOA. The ABMS represents 24 boards related to medical specialties ranging from allergy and immunology to urology. The AOA has approved 18 specialty boards, ranging from anesthesiology to surgery. For certification in a subspecialty, physicians usually need another one to two years of residency training in the specialty area. For information about different options for specialties and subspecialties to become board-certified, review information from the ABMS listed under *Additional Information* at the end of this chapter.

Desirable characteristics for people who wish to become physicians are a desire to serve patients, self-motivation, emotional stability, and the ability to survive the pressures and long hours of medical education and practice. Physicians also must demonstrate compassion and patience when caring for the sick or injured, who may be in extreme pain or distress. Excellent communication skills are necessary in order to communicate effectively with patients and other health professionals. Other important qualities are attention to detail to ensure appropriate treatment, leadership skills to direct the work of staff members, and problem-solving skills to evaluate the patient's symptoms and administer appropriate treatment in emergencies. Prospective physicians must be willing to study throughout their career.

Advancement

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

Employment Trends

Employment is expected to grow faster than the average for all occupations. Job opportunities should be very good, particularly in rural and low-income areas.

Employment Change

Employment of physicians and surgeons is projected to grow 14% from 2014 to 2024, above average for all occupations. Job growth will occur because of the continued expansion of healthcare-related industries. The growing and aging population will drive overall growth in the demand for physician services, as consumers continue to demand high levels of care using the latest technologies, diagnostic tests, and therapies. Many medical schools are increasing their enrollments based on a perceived new demand for physicians.

Despite growing demand for physicians and surgeons, some factors will temper growth. For example, new technologies allow physicians to be more productive. This means physicians can diagnose and treat more patients in the same amount of time. The rising cost of health care can dramatically affect the demand for physicians' services. PAs and ANPs, who can perform many of the routine duties of physicians at a fraction of the cost, may be increasingly used. Furthermore, the demand for physicians' services is highly sensitive to changes in healthcare reimbursement policies. If changes to health coverage result in higher out-of-pocket costs for consumers, they may demand fewer physician services.

Job Prospects

Opportunities for individuals interested in becoming physicians and surgeons are expected to be very good. In addition to job openings from employment growth, openings will result from the need to replace the relatively high number of physicians and surgeons expected to retire in the next decade.

Job prospects should be particularly good for physicians willing to practice in rural and low-income areas because these medically underserved areas typically have difficulty attracting these workers. Job prospects will also be especially good for physicians in specialties that afflict the rapidly growing elderly population. Examples of such specialties are cardiology and radiology because the risks for heart disease and cancer increase as people age. Most experts expect that the number of physicians and surgeons will increase by 99,300 from 708,300 in 2014 to 807,600 in 2024.

Earnings

Earnings of physicians and surgeons are among the highest of any occupation. Self-employed physicians—those who own or are part owners of their medical practice—generally have higher median incomes than salaried physicians. Earnings vary according to number of years in practice, geographic region, hours worked, skill, personality, and professional reputation. Physicians who are board certified in a specialty or subspecialty usually earn higher salaries, and those with additional responsibilities, such as the administrator of a medical group, also earn higher salaries. Self-employed physicians and surgeons must provide for their own health insurance and retirement.

The number of physicians for common specialty areas and mean salaries are listed in Table 9.1. The Bureau of Labor Statistics does not collect information for all subspecialties; data for hospitalists and hospice and palliative medicine were obtained from other sources (**TABLE 9.2**).

TABLE 9.2 Practice Area and Mean Salaries of Physicians, 2014

Specialty	Number	Mean Salary
Anesthesiologist	30,060	$246,320
General internist	48,390	$191,530
Family and general practitioner	124,810	$186,320
General pediatrician	31,010	$175,400
Hospitalist	44,000	$252,996
Hospice and palliative medicine	6,952	$185,651
Obstetricians/gynecologists	21,740	$204,750
Psychiatrists	25,080	$182,700
Surgeons	41,070	$240,440

Data from: Bureau of Labor Statistics, U.S. Department of Labor. *May 2014 National Occupational Employment and Wage Estimates*.[8] Source for data on number of hospitalists: Royster S. You're a What? Hospitalist. *Career Outlook*. July 2015. Source for data on hospitalist salary: Quinn R. New State of Hospital Medicine Report Offers Insight to Trends in Hospitalist Compensation, Productivity. *The Hospitalist*. October 13, 2014. Source for data on number of hospice and palliative physicians: American Academy of Hospice and Palliative Medicine. *Certification for Hospice and Palliative Medicine*. Source for salary on hospice and palliative physicians: PayScale, Inc. *Physician/Doctor, Palliative Care Salary*.

Related Occupations

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

PODIATRISTS

Significant Points

- Formal training for podiatrists is similar to that of physicians and surgeons with four years of undergraduate school, four years of podiatry school, and one year of residency. Specialization requires an additional year or more.
- Podiatrists are needed to treat wounds associated with diabetes and peripheral arterial disease of the lower limbs and to treat bone deformities of the foot and ankle.
- Job opportunities should be excellent for podiatrists especially for those with certification in wound care and preservation and reconstruction of the ankle and foot.

Work Description

Podiatrists have training similar to MDs and DOs but specialize in the medical and surgical care of foot, ankle, and lower leg problems. They diagnose illnesses, treat injuries, and perform surgery involving the lower extremities. Podiatrists review the patient's medical history and perform a physical exam and X-rays, laboratory tests, and other diagnostic methods to make a diagnosis and develop a treatment plan (**FIGURE 9.4**).

Podiatrists treat a variety of foot and ankle ailments, including calluses, ingrown toenails, heel spurs, and arch problems. They also treat foot and leg problems associated with diabetes and other diseases. Some podiatrists spend most of their time performing advanced surgeries, such as foot and ankle reconstruction. Others may choose a specialty such as sports medicine or pediatrics.

Treatment may include prescribing shoe inserts (orthotics) to improve mobility or performing foot or ankle surgery to remove bone spurs or to correct foot and ankle deformities such as hammer toes or bunions. Another significant area of practice is treatment of wounds of the foot, ankle, or lower leg, often associated with diabetes or peripheral arterial disease of the lower legs. Wounds often take several weeks or months to completely heal and require surgical debridement. Podiatrists coordinate medical treatment with other physicians, for example endocrinologists when working with a patient with diabetes or a cardiologist for patients with peripheral arterial disease.

Podiatrists also give advice and instruction on foot and ankle care and on general wellness techniques, including choosing appropriate footwear to prevent callouses and bunions. They may provide routine foot care for the elderly who are no longer able to properly care for their feet and are at greater risk for falls.

FIGURE 9.4 Podiatrists specialize in medical and surgical treatment of the ankle and feet.
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Work Environment

Most podiatrists work in offices of podiatry, either on their own or with other podiatrists. Some work in group practices with other physicians or specialists. Others work in private and public hospitals and outpatient care centers and routinely care for residents in nursing and assisted-living facilities.

About 14% of podiatrists were self employed in 2012. Self-employed podiatrists either solely own or are partners in a medical practice. Most podiatrists work full time. Podiatrists' offices may be open in the evenings or on weekends to accommodate patients. In hospitals, podiatrists may have to work occasional nights or weekends, or may be on call. Podiatrists who own their practice may spend time on business-related activities, such as hiring employees and managing inventory.

Employment Opportunities

There were 9,600 podiatrists in the United States in 2014. Podiatry provides excellent opportunities as a health career because of the need for lower limb and feet care in those with diabetes and peripheral vascular disease and general podiatric care for the aging population.

Education and Legal Requirements

Podiatrists must earn a Doctor of Podiatric Medicine (DPM) degree and complete a three-year residency program. Podiatrists must be licensed.

Education and Training

Podiatrists must have a Doctor of Podiatric Medicine (DPM) degree from an accredited college of podiatric medicine. A DPM degree program takes four years to complete. In 2015, there were nine colleges of podiatric medicine accredited by the **Council on Podiatric Medical Education (CPME)**

Admission to podiatric medicine programs requires at least three years of undergraduate education, including specific courses in laboratory sciences such as biology, chemistry, and physics, as well as general coursework in subjects such as English. In practice, nearly all prospective podiatrists earn a bachelor's degree before attending a college of podiatric medicine. Admission to DPM programs usually requires taking the Medical College Admission Test (MCAT), the same exam required for medical students.

Courses for a Doctor of Podiatric Medicine degree are similar to those for other medical degrees. They include anatomy, physiology, pharmacology, and pathology, among other subjects. During their last two years, podiatric medical students gain supervised experience by completing clinical rotations.

After earning a DPM, podiatrists must apply to and complete a podiatric medical and surgical residency (PMSR) program, which lasts three years. Residency programs take place in hospitals and provide both medical and surgical experience. For a list of residencies available in the United States, go to the CPME website. Podiatrists may do additional training in specific fellowship areas. Some of the specialties are sports medicine, wound care, diabetic foot, complex lower limb extremity surgery, diabetic limb salvage and preservation, and reconstruction of the foot and ankle. For more information about specific fellowships, visit the CPME website listed at the end of this chapter.

Licensure

Podiatrists in every state must be licensed. Usually, podiatrists must pay a fee and pass the **American Podiatric Medical Licensing Exam (APMLE)**. Some states also require podiatrists to take a state-specific exam. Licenses must typically be renewed periodically, and podiatrists must take continuing medical education to maintain licensure.

Certification and Other Qualifications

Many podiatrists choose to become board certified. The **American Board of Podiatric Surgery** is the certifying agency in podiatric surgery, and the **American Board of Podiatric Medicine** is the certifying agency in orthopedics and primary care podiatry. Certification requires a combination of work experience and passing scores on exams.

Desirable qualities for podiatrists include compassion, since many patients that seek the services of a podiatrist are in pain. Since podiatrists spend most of their time interacting with patients excellent interpersonal skills—the ability to listen and put patients who are in pain or undergoing surgery at ease—are necessary. They also need to have critical thinking skills to correctly diagnose the patient's medical problems and to develop an appropriate treatment plan. Attention to

detail is also important to make an accurate diagnosis and to monitor patients during and after treatment.

Advancement

Podiatrists who obtain additional training through a fellowship and become certified in a subspecialty can expect higher salaries.

Employment Trends

As the U.S. population both ages and increases, the number of people expected to have mobility and foot-related problems will rise. Growing rates of chronic conditions such as diabetes and obesity also may limit mobility of those with these conditions, and lead to problems such as poor circulation in the feet and lower extremities. More podiatrists will be needed to provide care for these patients.

In addition, podiatrists are increasingly working in group practices along with other healthcare professionals. Continued growth in the use of outpatient surgery also will create new opportunities for podiatrists.

Employment Change

Employment of podiatrists is projected to grow 14% from 2014 to 2024, much faster than the average for all occupations. However, because it is a small occupation, the fast growth will result in only about 2,400 new jobs over the 10-year period.

Job Prospects

Job prospects for trained podiatrists should be good given that there are a limited number of colleges of podiatry. In addition, the retirement of currently practicing podiatrists in the coming years is expected to increase the number of job openings for podiatrists.

Earnings

The median annual wage for podiatrists was $120,700 in May 2014. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less.

Self-employed podiatrists may earn more than salaried doctors, but they are also responsible for the costs of running a business, such as providing benefits for themselves and employees.

Related Occupations

Other health professionals which have similar training requirements and responsibilities are chiropractors, occupational therapists, physicians and surgeons, optometrists, orthotists and prosthetists, and physical therapists.

Additional Information

For general information on physicians, contact:

- American Medical Association, 515 N. State St., Chicago, IL 60654. Internet: http://www.ama-assn.org/go/becominganmd
- American Osteopathic Association, Department of Communications, 142 East Ontario St., Chicago, IL 60611. Internet: http://www.osteopathic.org

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 (AAMC), Section for Student Services, 2450 N St. NW, Washington, DC 20037. Internet: http://www.aamc.org/students

For information about osteopathic medical schools, contact:

- American Association of Colleges of Osteopathic Medicine, 5550 Friendship Boulevard, Suite 310, Chevy Chase, MD 20815. Internet: http://www.aacom.org/become-a-doctor/us-coms

For a list of both MD and DO residencies and fellowships listed with the Electronic Residency Application Service (ERAS) of the American Association of Medical Colleges, visit:

- ERAS 2016 Participating Specialties & Programs. Internet: https://services.aamc.org/eras/erasstats/par/index.cfm

For information on licensing, contact

- Federation of State Medical Boards, P.O. Box 619850, Dallas, TX 75261-9850. Internet: http://www.fsmb.org

For information about specialties and subspecialties in medicine and requirements for obtaining board certification, contact:

- American Board of Medical Specialties (ABMS), 353 North Clark Street, Suite 1400, Chicago, IL 60654. Internet: http://www.abms.org/member-boards/specialty-subspecialty-certificates/

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

For more information about podiatrists, visit:

- American Podiatric Medical Association, 9312 Old Georgetown Road, Bethesda, MD, 20814. Internet: http://www.apma.org/

For information on colleges of podiatric medicine and their entrance requirements, curricula, and student financial aid, visit:

- American Association of Colleges of Podiatric Medicine, 15850 Crabbs Branch Way, Suite 320, Rockville, MD, 20855. Internet: http://www.aacpm.org/

For a list of accredited podiatric programs and residency programs, visit:

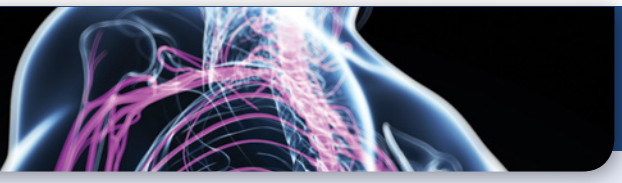
- Council on Podiatric Medical Education, 9312 Old Georgetown Road, Bethesda, MD 20814. Internet: http://www.cpme.org/

For more information about the podiatric licensing exam, visit:

- The National Board of Podiatric Medical Examiners, Prometric/NBPME, 7941 Corporate Drive, Nottingham, MD 21236 Internet: http://apmle.com/talk-us

For more information about board certification for podiatrists, visit:

- American Board of Foot and Ankle Surgery, 445 Fillmore Street, San Francisco, CA 94117. Internet: https://www.abfas.org/Pages/About/Staff.aspx
- American Board of Podiatric Medicine, 3812 Sepulveda Boulevard, Suite 530, Torrance, CA 90506. Internet: https://www.abpmed.org/



LEARNING PORTFOLIO

Issues for Discussion

1. Review the cartoon vignettes projecting a doctor shortage in 2025 developed by the American Association of Medical Colleges (Internet: http://www.thedoctorshortage.com/pages/shortage) What are some of the reasons for a possible doctor shortage within the next decade? How can physician assistants and advanced practice registered nurses be used to extend the care of physicians?
2. Review the four main categories of *Core Competencies* (interpersonal, intrapersonal, thinking and reasoning, and science) used to evaluate applicants to medical school. Choose two core competencies within two different main categories and describe how you would demonstrate those competencies through coursework, paid work, or volunteer experience as a high school or undergraduate college student. (*Core Competencies for Entering Medical Students*. Association of American Medical Colleges. Internet: https://www.aamc.org/initiatives/admissionsinitiative/competencies/)
3. Read the article, "Hospitalist James O'Callaghan Finds Career Satisfaction in Pediatric Medicine" from the October 1, 2013 issue of *The Hospitalist* (Internet: http://www.the-hospitalist.org/article/hospitalist-james-ocallaghan-finds-career-satisfaction-in-pediatric-medicine/). What are the areas of job responsibility for this hospitalist? What does the hospitalist like and dislike about his job?
4. Go to the American Board of Medical Specialties website and choose one specialty that you might be interested in pursuing (Internet: http://www.abms.org/member-boards/specialty-subspecialty-certificates/) What are the requirements for certification in one specialty of your choosing? Are there subspecialties within the specialty?

Enrichment Activities

1. Go to the website and read stories written about the path of medical students to medical school. (*Inspiring Stories*. Association of American Medical Colleges. Internet: https://www.aamc.org/students/aspiring/inspiring-stories/)
2. View videos of medical students as they describe how they made the choice to apply for medical school. (*Ask a Med Student Video Series*. Association of American Medical Colleges. Internet: https://www.aamc.org/students/aspiring/inspiring-stories/405784/ask-medstudent.html)
3. Go to the website futureofhospitalmedicine.org and view the video as doctors describe their work as a hospitalist. (Internet: http://futureofhospitalmedicine.org/whatsahospitalist)
4. Read stories of physicians who specialize in hospice and palliative medicine by visiting the American Association of Hospice and Palliative Medicine website (Internet: http://aahpm.org/career/overview).
5. Go to the Council on Podiatric Medical Education website to review fellowships offered for licensed podiatrists (Internet: http://www.cpme.org/).

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CHAPTER 10

Physician Assistant*

Key Terms

Emergency medicine
Family practice
Geriatrics
Gynecology
Internal medicine
Middle-level health workers
National Commission on Certification of Physician Assistants (NCCPA)
Pediatrics
Physician Assistant National Certifying Examination (PANCE)
Primary care
Psychiatry
Surgery
Telemedicine

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. U.S. Department of Labor. *Occupational Outlook Handbook 2016-2017 Edition. Washington, DC: U.S. Department of Labor; 2016.*

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. PAs are skilled health practitioners, qualified through academic and clinical training to serve patients with and under the supervision of a doctor of medicine (MD) or osteopathy (DO), who is responsible for the performance of that particular assistant. PAs are also responsible for their own actions and are considered **middle-level health workers**.

PHYSICIAN ASSISTANT

Significant Points

- Requirements for admission to training programs vary; most applicants have a college degree and some health-related work experience.
- Physician assistants must complete an accredited education program and pass a national exam in order to obtain a license.
- Employment is projected to grow much faster than average.
- Job opportunities should be good, particularly in rural and inner-city healthcare facilities.

Work Description

Physician assistants are formally trained to provide routine diagnostic, therapeutic, and preventive healthcare 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 (FIGURE 10.1). 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.

FIGURE 10.1 Splinting a patient's wrist.
© AnnBaldwin/iStockPhoto

Physician assistants always work under the supervision of a physician. The extent of supervision, however, depends on the work setting. 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. Settings that see the most physician assistants employed are hospitals, clinics, and physicians' offices. Leading medical 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-lit 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 5-day, 40-hour week. A collage of activities in which PAs engage is seen in FIGURE 10.2.

Employment Opportunities

Physician assistants held about 94,400 jobs in 2014. The number of jobs is greater than the number of practicing PAs because some hold two or more jobs. For example, some PAs work with a supervising physician, but also work in another practice, clinic, or hospital. According to the American Academy of Physician Assistants, about 15% of actively practicing PAs worked in more than one clinical job concurrently in 2008[1].

Around 57% of jobs for PAs were in the offices of physicians. About 22% were in public or private hospitals. The rest were mostly in outpatient care centers, including health maintenance organizations, the federal government, and public or private colleges, universities, and professional schools. Very few PAs were self-employed.

FIGURE 10.2 Physician assistants perform a wide variety of activities.
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Educational and Legal Requirements

Physician assistant programs usually last at least two years in a post-graduate setting. Admission requirements vary by program, but many require at least two years of college and some healthcare experience. All states require that PAs complete an accredited, formal education program and pass a national exam to obtain a license.

Education and Training

Physician assistant education programs usually last at least two years and are full time. 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.

In 2016, 199 education programs for physician assistants were accredited or provisionally accredited by the Accreditation Review Commission on Education for the Physician Assistant, Inc.[2] Depending on the program, one might earn a master's, bachelor's, or associate's degree, or a certificate upon completion of the study requirements.

Admission requirements vary, but many programs require two to four years of college and some work experience in the healthcare field. Students should take courses in biology, English, chemistry, mathematics, psychology, and the social sciences. Many PAs have prior experience as registered nurses, and others come from varied backgrounds, including military corpsmen or medics, and allied health occupations, such as respiratory therapists, physical therapists, and emergency medical technicians and paramedics.

PA education includes classroom instruction in biochemistry, pathology, human anatomy, physiology, microbiology, clinical pharmacology, clinical medicine, geriatric

FIGURE 10.3 As a part of their educational experience, physician assistant students obtain supervised clinical training in several areas as well as classroom instruction around many critical topics including disease prevention.

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and home health care, disease prevention, and medical ethics. Students obtain supervised clinical training in several areas, including family medicine, internal medicine, surgery, prenatal care and **gynecology**, geriatrics, emergency medicine, **psychiatry**, and pediatrics (**FIGURE 10.3**). Sometimes, PA students serve one or more of these rotations under the supervision of a physician who is seeking to hire a PA. The rotations often lead to permanent employment.

Licensure

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 Assistant National Certifying Examination (PANCE)**, administered by the **National Commission on Certification of Physician Assistants (NCCPA)** and open only to graduates of accredited PA education programs.[3] Only those successfully completing 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. Beginning in 2014, they must pass a recertification examination or complete an alternative program combining learning experiences and a take-home examination every 10 years.

Other Qualifications

Physician assistants must have a desire to serve patients and be self motivated. PAs also must have a good bedside manner, emotional stability, and the ability to make decisions in emergencies. Physician assistants must be willing to study throughout their career to keep up with medical advances.

Certification and Advancement

Some PAs pursue additional education in a specialty such as surgery, neonatology, or emergency medicine. PA postgraduate educational 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.

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

Employment Trends

Employment is expected to grow much faster than average as healthcare establishments increasingly use physician assistants to contain costs. Job opportunities for PAs should be good, particularly in rural and inner-city clinics, as these settings typically have difficulty attracting physicians.

Employment Change

Employment of physician assistants is expected to grow 30% from 2014 to 2024, much faster than the average for all occupations. Projected rapid job growth reflects the expansion of healthcare industries and an emphasis on cost containment, which results in the increasing use of PAs by healthcare establishments.

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

Besides working in traditional office-based settings, PAs should find a growing number of jobs in institutional settings such as hospitals, academic medical centers, public clinics, and prisons. PAs also may be needed to augment medical staffing in inpatient teaching hospital settings as the number of hours physician residents are permitted to work is reduced, encouraging hospitals to use PAs to supply some physician resident services.

TABLE 10.1 Projection Data for Physician Assistants, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Physician assistants	94,400	123,200	28,700	30%

Job Prospects

Job opportunities for PAs should be good, particularly in rural and inner-city clinics, because those settings have difficulty attracting physicians. In addition to job openings from employment growth, openings will result from the need to replace physician assistants who retire or leave the occupation permanently. Opportunities will be best in states that allow PAs a wider scope of practice. TABLE 10.1 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual earnings of wage-and-salary physician assistants were $95,820 in 2014. The lowest 10% earned less than $64,100, and the highest 10% earned more than $134,720. Median annual wages in the industries employing the largest numbers of physician assistants in May 2014 are shown in TABLE 10.2.

According to the American Academy of Physician Assistants' 2010 Census Report, median income for physician assistants in full-time clinical practice was $90,000 in 2010; median income for first-year graduates was $80,000. Income varies by specialty, practice setting, geographic location, and years of experience. Employers often pay for their employees' liability insurance, registration fees with the Drug Enforcement Administration, state licensing fees, and credentialing fees.

Related Occupations

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

TABLE 10.2 Median Annual Earnings in the Industries Employing the Largest Numbers of Physician Assistants, May 2014

General medical and surgical hospitals	$98,830
Outpatient care centers	$101,600
Offices of physicians	$97,270
Federal executive branch	$85,450
Colleges, universities, and professional schools	$91,530

Additional Information

For information on a career as a physician assistant, including a list of accredited programs, contact:

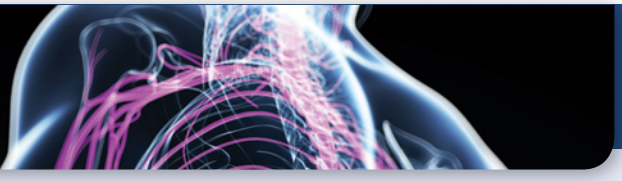
- American Academy of Physician Assistants Information Center, 2318 Mill Road, Suite 1300, Alexandria, VA 22314. Internet: http://www.aapa.org

For a list of accredited physician assistant, programs, contact:

- Accreditation Review Commission on Education for the Physician Assistants, 12000 Findley Rd., Suite 240, Johns Creek, GA 30097. Internet: http://www.arc-pa.org

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

- National Commission on Certification of Physician Assistants, Inc., 12000 Findley Rd., Suite 200, Duluth, GA 30097. Internet: http://www.nccpa.net



LEARNING PORTFOLIO

Issues for Discussion

1. Every state's licensing board requires physician assistants to work under the supervision of a physician. Brainstorm why state licensing boards believe a physician's supervision might be needed.
2. The physician assistant field is relatively new to health care, beginning in the 1960s and becoming more prevalent in the 21st century. Not all patients want to be seen by a physician assistant, with some preferring to be seen by a physician instead. Brainstorm the reasons why patients might resist receiving care from a physician assistant.

Enrichment Activities

1. Use the Internet to research national organizations associated with nurses, physician assistants, medical doctors, and doctors of osteopathy. Compare and contrast the responsibilities of a physician assistant with a nurse, a medical doctor, or a doctor of osteopathy.
2. Using the Internet, research the history and development of the physician assistant profession. Identify the reason(s) why the profession was created and when and how the federal government and insurance companies decided to reimburse care provided by physician assistants. Prepare a written narrative or infographic of this information to your instructor.
3. View the video entitled, *What Is a PA?* found at https://aapa.org/what-is-a-pa/ and the video entitled *Why I Love Being a PA* found at https://aapa.org/become-a-pa/. Discuss your impressions with your instructor and classmates.

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CHAPTER 11

Nursing*

Key Terms

ADN-to-BSN
ADN-to-MSN
Advanced practice registered nurse (APRN)
American Academy of Nurse Practitioners Certification Program
American College of Nurse-Midwives (ACNM)
American Midwifery Certification Board
American Nursing Credentialing Center
Associate's degree in nursing (ADN)
Bachelor of science in nursing (BSN)
Certified midwives (CM)
Certified nurse-midwives (CNM)
Certified registered nurse anesthetists (CRNAs)
Clinical nurse specialist (CNS)
Consensus Model for APRN Regulation
Licensed practical nurses (LPNs)
Licensed vocational nurses (LVNs)
LPN-to-BSN
Master of Science in Nursing (MSN)
National Board of Certification and Recertification for Nurse Anesthetists (NBCRNA)
National Council Licensure Examination (NCLEX)
National Council of State Boards of Nursing
National League for Nursing
Nurse anesthetists
Nurse-midwives
Nurse practitioners (NPs)
Pediatric Nursing Certification Board
Pediatric oncology
Registered nurses (RNs)
RN-to-BSN

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. U.S. Department of Labor. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

THE FUTURE OF NURSING

The demand for skilled nurses is at an all-time high for three reasons. First, the expansion of the aging population with complex health problems increases the number of people requiring skilled nursing care. Second, greater numbers of the newly insured people are seeking health care as a result of the Affordable Care Act (ACA).[1] Third, the ACA mandates higher requirements for quality care while lowering costs. For example, Medicare reimbursement rates to hospitals are based on readmission rates for heart failure, heart attack, and pneumonia.[2] Finally, there is evidence that higher nurse education is linked to improved patient outcomes. There is also a greater need for highly skilled nurses to assume new and expanded roles in community settings—primary care, public health, and long-term care. Nurses in these settings are needed to serve as care coordinators, case managers, chronic care specialists' and patient educators.[1,3] In addition, because of a shortage of primary care physicians, nurse practitioners are assuming the role of primary care providers in outpatient settings.

Projected employment for registered nurses (RNs) in 2024 is 3.2 million, more than any other healthcare practitioner, and yet educational requirements for RNs are lower than any other practitioner with similar job responsibilities. Nurses can become registered after completing a two- to three-year associate's degree. Educational requirements for many entry–level healthcare practitioners are a master's degree for example—medical social workers, occupational therapists' and speech therapists, and entry–level requirements for audiologists and physical therapists are a doctorate degree. Also, in the past, nurses' training has focused on acute hospital care while current needs are preventing and managing chronic disease in community settings.

The 2010 Institute of Medicine report, *The Future of Nursing: Leading Change, Advancing Health*, identified a need to make changes in nursing education. A need not only to increase the *number* of nurses, but also to increase the *skills* of RNs—necessary to deliver safe, high-quality care across all settings from primary care to community and public health. Recommendations to ensure that nurses receive high–quality education were to increase the number of RNs with a bachelor's degree from 50% to 80% by 2020 and doubling the number with doctorate degrees by 2020. Another recommendation was to require a nurse residency program after completing pre-licensure or an advanced practice degree program. Because barriers to advanced education were cost and lack of work flexibility, the IOM report recommended that employers cover the cost of tuition and provide benefits for part-time employees to encourage RNs to obtain a bachelor's or higher degree.[4] Several professional organizations including the American Association of Colleges of Nursing (AACN) and the American Association of Community Colleges (AACC) recommend structuring bridge programs and educational pathways that are seamless to allow graduates to transition into a higher level of practice through education. For example a licensed practical nurse/licensed vocational nurse (LPN/LVN) can transition to a **bachelor of science in nursing (LPN-to-BSN)**, an associate's degree nursing graduate can transition into bachelor's programs (**ADN-to-BSN**) or master of science in nursing (MSN) programs (**ADN-to-MSN**). Many RNs who graduate from ADN programs do not complete a bachelor's program. There is also a need for nurses to obtain master's (MSN) and doctorate degrees, both doctor of philosophy (PhD) and doctorate in nursing practice (DNP) to provide care in advanced practice roles, assume leadership position's and serve as faculty in nursing schools. Only 13% of nurses hold graduate degrees and only 1% hold doctorate degrees.[3] The number of years of education required to become employed in the nursing field is shown in **FIGURE 11.1**.

LPNs provide a variety of direct care services—administering medication, taking medical histories, recording symptoms and vital signs, and other tasks as delegated by RNs, physicians, and other healthcare providers. LPNs typically receive training for a year beyond high school. The route to becoming a RN is to complete a two-year associate's degree, a diploma from an approved nursing program, or a bachelor's degree in nursing, The scope of RN responsibilities is more complex and analytical than that of LPNs. RNs provide a wide array of direct-care services, such as administering treatments, care coordination, disease prevention, patient education, and health promotion for individuals, families, and communities. RNs may choose to obtain advanced clinical education and training to become **advanced practice registered nurses (APRNs)**. APRNs usually have a master's degree, although some complete doctoral-level training, and often focus in a clinical specialty area.[6]

For both LPNs and RNs, the majority of jobs through 2020 are expected to be in home health care and ambulatory care, with fewer jobs in hospitals and skilled nursing and residential facilities. Nurses also may provide basic health care to patients outside of healthcare settings in such venues as correctional facilities, schools, summer camps, manufacturing plants, and the military. Both LPNs and RNs provide private duty for those living at home who need 24–hour-a-day care because of physical or mental disabilities. Some RNs travel around the United States and throughout the world providing care to patients in areas with shortages of healthcare workers or during an emergency such as weather-related disasters—a hurricane or tornado. **TABLE 11.1** compares projected growth rates for LPNs and RNs through 2020.

For students interested in a nursing career there are many choices available for training—one year for an entry-level career as a LPN or two to four years to become a RN. Nurses work with all ages from premature infants in a neonatal intensive care unit to an elderly woman living at home on hospice care. Opportunities for advancement are through additional experience and education. Specializing in a clinical area and working more independently requires a master's degree. APRNs work as a nurse anesthetist, mid wife, or nurse practitioner specializing in pediatrics, psychiatry, or gerontology. There are many possibilities for a nursing career depending on the preferred work environment and educational goals. In the

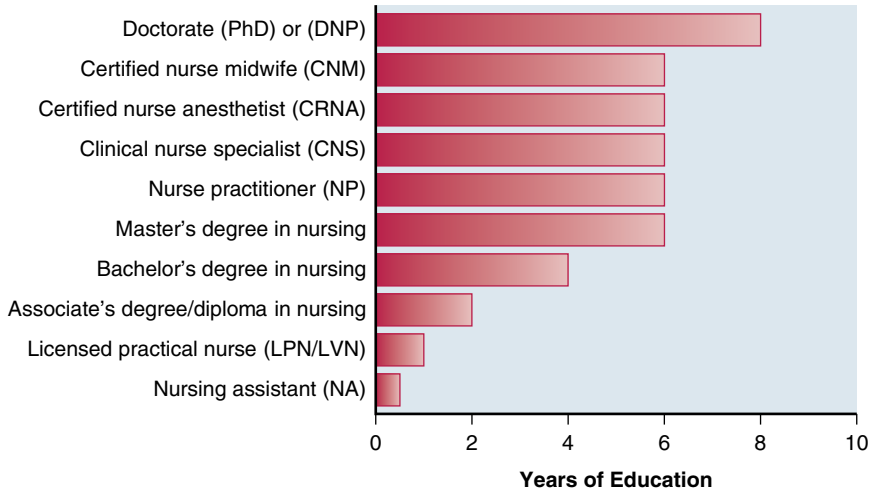

FIGURE 11.1 Educational pathways for nursing professionals.
Data from: IOM (Institute of Medicine). *The Future of Nursing: Leading Change, Advancing Health.* Washington, DC: The National Academies Press; 2011.[5]

TABLE 11.1 Projected Growth Rates for RNs and LPNs by Industry, 2010–2020

Industry	RNs	LPNs
Home healthcare services	55%	72%
Ambulatory healthcare	48%	48%
Employment services	24%	25%
Hospitals, public and private	24%	8%
Nursing and residential facilities	19%	18%

Data from: Bovbjerg RR, McDonald E. *Literature Review: Healthcare Occupational Training and Support Programs under the ACA—Background and Implications for Evaluating HPOG.* OPRE Report #2014–29, Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services; 2014.[7]

future nurses will be expected to have completed a minimum of a bachelor's degree and a graduate degree will be required to specialize or to assume supervisory responsibilities, teaching, or research.

The focus of this chapter is the RN, APRN—nurse anesthetist, nurse-midwife, clinical nurse specialist, and nurse practitioner—and the LPN/LVN. For information on educational requirements and responsibilities of nursing assistants review Chapter 32.

REGISTERED NURSES (RNs)

Significant Points

- Registered nurses (RNs) constitute the largest healthcare occupation, with 2.7 million jobs.
- About 60% of RN jobs are in hospitals.
- The three typical educational paths to becoming a RN are a diploma from an approved nursing program, associate's degree from a community college, or bachelor's degree from a four-year college.
- Clinical nurse specialists (CNSs) provide direct patient care to a certain population of people and/or within a specific medical or surgical specialty and usually require a master's degree.
- Overall job opportunities are expected to be excellent, especially for RNs with a bachelor's degree, but may vary by employment and geographic setting; some employers report difficulty in attracting and retaining an adequate number of RNs usually in underserved urban or rural areas.

Work Description

Registered nurses (RNs), regardless of specialty or work setting, treat and educate patients and the public about various medical conditions. RNs also give advice and emotional support to the patient as well as family members. RNs record medical histories and symptoms, help perform diagnostic tests and analyze results, operate medical equipment, administer treatment and medications, and help with patient follow-up and rehabilitation.

RNs teach patients and their families how to manage injuries or illness by explaining post-treatment home care such as diet and exercise programs, and self-administration of medication and physical therapy. Some RNs may work to promote general health by educating the public on warning signs and symptoms of disease. RNs also might conduct general health screening or immunization clinics, blood drives, and public seminars on various conditions.

When caring for patients, RNs establish a care plan that may include numerous activities, such as administering medication, carefully checking dosages; starting, maintaining,

and discontinuing intravenous (IV) lines for fluid, medication, blood, and blood products; administering treatments; observing the patient and recording observations; and consulting with physicians and other healthcare clinicians. Some RNs direct the work of LPNs and nursing assistants regarding patient care. RNs with advanced educational preparation and training may perform diagnostic and therapeutic procedures.

Specific work responsibilities will vary; duties and titles are often determined by the work setting or patient population served. RNs can specialize in one or more areas of patient care. RNs may work in a specific workplace such as a trauma nurse who works in a hospital emergency room or a school nurse who works in an elementary, middle, or high school. RNs may specialize in specific health conditions, as do diabetes specialists who assist patients in managing blood glucose, medications, and physical activity. Other RNs specialize in working with a specific part of the body or organ, such as dermatology nurses, who work with patients who have skin disorders. RNs may also specialize with a well-defined population, such as geriatric nurses, who work with the elderly. Some RNs may combine specialties. For example, **pediatric oncology** nurses deal with children and adolescents who have cancer. The opportunities for specialization for RNs are extensive with 104 nursing specialties.[8] TABLE 11.2 provides other examples of specialty areas and responsibilities.

Some nurses have jobs that require little or no direct patient care, but still require an active RN license. Forensics nurses participate in the scientific investigation and treatment of abuse victims, violence, criminal activity, and traumatic accidents. Infection control nurses identify, track, and control infectious outbreaks in healthcare facilities and develop programs for outbreak prevention and response to biological terrorism. Nurse educators plan, develop, implement, and evaluate educational programs and curricula for the professional development of student nurses and RNs.

Nurses also may work as healthcare consultants, public policy advisors, pharmaceutical and medical supply researchers and salespersons, and medical writers and editors. Nursing informatics integrates nursing science with information management and analytical science to manage and communicate nursing data to improve decision making by consumers, patients, nurses, and other healthcare providers. The majority of nurses, however work in hospitals, ambulatory care, home healthcare, and long-term care and some of the roles of nurses in each of these settings are described below.

Ambulatory care nurses provide preventive care and treat patients with a variety of illnesses and injuries in physicians' offices or in clinics including public health clinics. Holistic nurses provide care—such as acupuncture, massage

TABLE 11.2 Specialty Areas and Responsibilities for Registered Nurses

Specialty Area	Responsibilities
Addiction nurse	Care for patients with addictions to alcohol, drugs, or tobacco; usually in a rehabilitation inpatient or outpatient setting.
Cardiovascular nurse	Care for patients with heart disease, for example, heart failure or after a heart attack and after cardiovascular surgery.
Critical care nurse	Monitor and treat patients with serious illness or injury in a hospital intensive care unit (ICU), for example, a medical ICU or surgery ICU.
Gynecology nurse	Care for women with disorders of the reproductive system, including endometriosis, cancer, and sexually transmitted diseases.
Hospice nurse	Care for terminally ill patients to manage pain and other symptoms that accompany the dying process.
Neonatology nurse	Care for newborn babies and educate family members on infant care.
Nephrology nurse	Care for patients with acute or chronic kidney disease who may be on dialysis.
Psychiatric nurse	Care for patients with anxiety or mood disorders and other mental illness.
Rehabilitation nurse	Care for patients recovering from surgery, an accident or heart attack, or with chronic lung disease.
Transplant nurse	Care for both transplant recipients and living donors, and monitor signs of organ rejection.

Data from: The Campaign for Nursing's Future. *Explore Specialties*. Internet: http://www.discovernursing.com/explore-specialties#no-filters

and aromatherapy, and biofeedback—meant to treat mental and spiritual health in addition to physical health. Diabetes management nurses help those with diabetes to manage their disease by teaching them proper nutrition and showing them how to test blood sugar levels and administer insulin injections. Oncology nurses care for patients with various types of cancer and may assist in the administration of radiation and chemotherapies and follow-up monitoring. Occupational health nurses work in large manufacturing plants, such as automobile factories, where there is high risk for employee injury; they recognize and prevent health effects from hazardous exposure to chemicals and prevent job-related injuries and illnesses, provide monitoring and emergency care services, and help employers implement health and safety standards. Some ambulatory care nurses are involved in telehealth, providing care and advice through electronic communications such as video conferencing, email, or by telephone.

Hospital nurses provide care to patients with serious, complex, and acute illnesses or injuries that require very close monitoring and extensive medication protocols and therapies. Emergency, or trauma, nurses work in the emergency room of a hospital or stand-alone emergency departments, providing initial assessments and care for patients with life-threatening conditions, for example after a heart attack, car accident, or gun shot wound. Some emergency nurses may become qualified to serve as a transport nurse, one who provides medical care to patients transported by helicopter or airplane to the nearest medical facility especially in rural areas. Medical-surgical nurses provide health promotion and basic medical care to patients before and after surgery. Perioperative nurses assist surgeons by selecting and handling instruments, controlling bleeding, and suturing incisions. Wound, ostomy, and continence nurses treat patients with wounds caused by traumatic injury, ulcers, or arterial disease; provide postoperative care for patients with openings that allow for alternative methods of bodily waste elimination; and treat patients with urinary and fecal incontinence.

Home healthcare nurses provide at-home nursing care for patients, often as follow-up care after discharge from a hospital or from a rehabilitation, long-term care, or skilled nursing facility. Infusion nurses administer medications, fluids, and blood to patients through the patients' veins. Nurses also provide wound care for patients with pressure ulcers; they also monitor medication compliance for patients with serious medical problems, such as asthma or heart failure. Other nurses who make home visits are psychiatric nurses, who monitor medication compliance and provide counseling for those with mental illness, and public health nurses who provide education and support for new mothers.

Long-term care nurses provide healthcare services on a recurring basis to patients with chronic physical or mental disorders, often in nursing or assisted-living facilities, adult day care, intermediate care facilities for those with intellectual disabilities or inpatient psychiatric services for those under age 21. Rehabilitation centers and skilled nursing facilities provide in-patient, short-term services for those recovering from surgery, for example a hip replacement or from complications of a lung disease requiring respiratory support.

Work Environment

Most RNs work in well-lit, comfortable healthcare facilities. Other nurses travel to patients' homes, schools, community centers, and other sites. RNs may spend considerable time walking, bending, stretching, and standing. Patients in hospitals and nursing care facilities require 24-hour care; consequently, nurses in these institutions may work nights, weekends, and holidays. RNs also may be on call—available to work on short notice.

Nurses who work in offices, schools, and other settings that do not provide 24-hour care are more likely to work regular business hours. Nurses who work in hospitals, rehabilitation centers, and skilled nursing facilities work in shifts. The most common shift for hospitals is three 12-hour shifts per week. Those in nursing homed are more likely to work five 8-hour shifts. The newest employee usually works the night shift or a rotating shift, which may interfere with regular sleep patterns. Nurses in ambulatory settings usually work a day shift, however the hours can be from 7 AM to 7 PM. Nurses in home care usually have the flexibility of scheduling appointments.

RNs may be in close contact with individuals who have infectious diseases and with toxic, harmful, or potentially hazardous compounds, solutions, and medications. RNs must observe rigid, standardized guidelines to guard against disease and other dangers, such as those posed by radiation, accidental needle sticks, chemicals used to sterilize instruments, and anesthetics. In addition, they are vulnerable to back injury when moving or lifting patients.

Most nurses work as part of a team of other health professionals such as physicians, respiratory therapists, dietitians, occupational and physical therapists, and others. Some teams have regular team meetings with the patient to discuss treatment plans.

Employment Opportunities

As the largest healthcare occupation, RNs held about 2.7 million jobs in 2014 and hospitals employed the majority of RNs, with 61% of such jobs. About 7% of jobs were in offices of physicians, 6% in home healthcare services, and 7% in nursing and residential care facilities.

Educational and Legal Requirements

Educational paths to becoming a RN are a bachelor's degree, an associate's degree, or diploma from an approved nursing program. Individuals then must complete a national licensing examination in order to obtain a nursing license. Specializing in a clinical specialty often requires a master's degree.

Education and Training

There are three typical educational paths to becoming a RN—a bachelor's of science degree in nursing **(BSN)**, which takes four years to complete, an **associate's degree in nursing (ADN)**, or a diploma. BSN programs are offered by colleges and universities and take four years to complete. ADN programs are offered by community colleges and take about two to three years to complete. Diploma programs, administered in hospitals, last about three years. Generally, licensed graduates of any of the three types of educational programs qualify for entry-level positions as staff nurses. There are hundreds of registered nursing programs that result in an ADN or BSN; however, there are relatively few diploma programs.

For high school students interested in becoming a nurse, recommended courses are biology, chemistry, physics, computer science, algebra, and geometry. Two years of foreign language are also recommended, since English is not the first language for many patients. In all nursing education programs, students take courses in anatomy, physiology, microbiology, chemistry, nutrition, psychology and other social and behavioral sciences, as well as in liberal arts.

All programs also include supervised clinical experience provided in hospital departments such as pediatrics, psychiatry, maternity, and surgery. A number of programs include clinical experience in nursing care facilities, public health departments, home health agencies, and ambulatory clinics.

Many registered nurses with an ADN or diploma choose to go back to school to earn a bachelor's degree through an **RN-to-BSN**, degree program, RN-to-MSN degree program, or programs for those who wish to enter the nursing profession but hold a bachelor's degree in another field. Accelerated BSN programs last 12 to 18 months and provide the fastest route to a BSN for individuals who already hold a degree.

Individuals considering a career in nursing should carefully weigh the advantages and disadvantages of enrolling in each type of education program. Advancement opportunities may be more limited for ADN and diploma holders compared to RNs who obtain a BSN or higher. Individuals who complete a BSN receive more training in areas such as communication, leadership, and critical thinking, all of which are becoming more important as nursing practice becomes more complex. Additionally, a BSN offer more clinical experience in nonhospital settings. A BSN is often necessary for administrative positions, research, consulting, and teaching.

Licensure

In all states, the District of Columbia, and U.S. territories, students must graduate from an approved nursing program and pass a national licensing examination, known as the **National Council Licensure Examination** (**NCLEX-RN)**, in order to obtain a RN nursing license. Other requirements for licensing vary by state. Each state's board of nursing can give details. For more on the NCLEX-RN examination and a list of state boards of nursing, visit the National Council of State Boards of Nursing website.

Certification and Other Qualifications

Certification is optional for RNs; however, nurses with certification will be recognized as having additional qualifications, which will be an advantage when applying for jobs. The **American Nursing Credentialing Center** offers certification for specialty areas for nurses, for example, nursing informatics, ambulatory care nursing, and cardiac rehabilitation nursing. The **Pediatric Nursing Certification Board** certifies nurses that work in the area of pediatrics, and the **National League for Nursing** certifies nurse educators. For specific specialty areas and eligibility requirements, go to the credentialing resources listed at the end of the chapter under *Additional Information*.

Desirable personal qualities for RNs are to be caring, sympathetic, responsible, and detail oriented. Critical-thinking skills are necessary to correctly assess patients' conditions and determine when to take corrective action, and when to make referrals to other health professionals. They need emotional stability to cope with human suffering, emergencies, and other stresses. Because most nurses work with multiple patients with different health needs, organizational skills are critical to ensure that each patient receives the correct treatment at the right time. Speaking skills are necessary as nurses must be able to talk with patients to assess their health conditions and to instruct patients to take medications correctly, as well as perform other self-care activities. Nurses also need to communicate patient needs and to update the status of patients with other health team members. RNs must be able to direct or supervise others.

Advancement

Most RNs begin as staff nurses in hospitals and, with experience and good performance, often move to other settings or are promoted to positions with more responsibility. Another path to advancement is specialty certification, which is usually voluntary but demonstrates adherence to a higher standard; some employers may require it.[8] In management, nurses can advance from assistant unit manager or head nurse to more senior-level administrative roles of assistant director, director, vice president, or chief of nursing. Increasingly, management-level nursing positions require a graduate or an advanced degree in nursing or health services administration. Administrative positions require leadership, communication and negotiation skills, and good judgment (FIGURE 11.2).

Employment Trends

Overall job opportunities for RNs are expected to be excellent, but may vary by employment and geographic setting.

FIGURE 11.2 A registered nurse can become certified as a pediatric nurse.
© Monkey Business Images/Shutterstock

Employment of RNs is expected to grow faster than average, and because the occupation is very large, 439,300 new jobs are projected by 2024, among the largest number of new jobs for any occupation. Additionally, hundreds of thousands of job openings will result from the need to replace experienced nurses who leave the occupation.

Employment Change

Employment of RNs is expected to grow by 16% from 2014 to 2024, faster than the average for all occupations. Demand for healthcare services will increase because of the aging population, since older people typically have more medical problems than younger people. Nurses also will be needed to educate and to care for geriatric patients with various chronic conditions, such as arthritis, dementia, diabetes, and obesity. In addition, the number of individuals who have access to healthcare services will increase as a result of federal health insurance reform. More nurses will be needed to care for these patients.

Employment of RNs will not grow at the same rate in every industry; growth is expected to be slower in hospitals—health care's largest industry—than in most other healthcare industries. Growth will be driven by technological advances in patient care, which permit a greater number of health problems to be treated, and by an increasing emphasis on preventive care. Although the intensity of nursing care is likely to increase, requiring more nurses per patient, the number of inpatients (those who remain in the hospital for more than 24 hours) is not likely to grow by much. The financial pressure on hospitals to discharge patients as soon as possible may result in more people receiving care in outpatient care centers, such as those providing same-day surgery, rehabilitation, and chemotherapy; because many older people prefer to be treated at home or in residential care facilities, registered nurses will be in demand in those settings.

Job Prospects

Overall, job opportunities are expected to be excellent for RNs. Qualified applicants to nursing schools are being turned away because of a shortage of nursing faculty. The need for nursing faculty will only increase as many instructors are near retirement. Despite the slower employment growth in hospitals, job opportunities should still be excellent because of the relatively high turnover of hospital nurses. To attract and retain qualified nurses, hospitals may offer signing bonuses, family-friendly work schedules, or subsidized training. Although faster employment growth is projected in physicians' offices and outpatient care centers, RNs may face greater competition for these positions because they generally offer regular working hours and more comfortable working environments. Generally, RNs with at least a BSN will have better job prospects. **TABLE 11.3** shows the projections data through 2024 from the national employment matrix.

Professional Profiles

Name: Andrew, RN
Title: Registered Nurse
Education: BS in Nursing

Q: Describe your job and organization

A: I work in a suburban community hospital that is part of a larger hospital system in a metropolitan area. The hospital has 380 beds with an average occupancy of 250. I work on a floor that averages 20 to 36 patients, that has a high turnover of patients as well as staff. After I was hired, I spent three months of orientation and training to prepare me for patient care.

Q: Describe a typical work day

A: A typical work day is quite vigorous and begins with checking patient equipment, passing medications, completing assessments, reviewing new orders, and attending patient conferences with case managers and physicians. I communicate with other hospital departments for patients having diagnostic or treatment procedures, such as the cath lab, GI lab, or radiology, and even the emergency room or doctor's office for newly admitted patients. By afternoon I might be arranging for kidney dialysis or receiving, transferring, or discharging a patient. Throughout the day peripheral IV lines may need to be replaced or feeding tubes may need to be adjusted. I may need to call the cafeteria to order a meal tray for a newly admitted patient or a patient returning to the floor from a procedure. Before ending my shift, I give a report on patients to the oncoming nurse.

Q: Why did you choose this profession?

A: I chose nursing because I wanted to help people create a better life, live longer, or have a better quality of life. Also, I have always been intrigued by the human body.

Q: What challenges you most about this profession?

A: I struggle with patients who are noncompliant with medications, diet, or other restrictions. I understand that it is difficult to make lifestyle changes; however, when patients are noncompliant, they are often readmitted to the hospital, and their health condition worsens.

Q: Is there room for advancement in this field?

A: There are many job opportunities for me since I have a BSN. Opportunities expand exponentially for registered nurses who obtain a master's degree or a nursing doctorate.

Q: Name and explain what part of your academic training most prepared you for this profession

A: The courses that provided the foundation for a nursing career were nursing assessment, medical-surgical nursing, and pathophysiology. These courses teach critical thinking as it relates to different disease processes.

Q: Did you face obstacles in pursuing your goals, and if so, describe them and how you overcame them.

A: It took me five years to complete a BSN because I changed colleges and majors, so not all courses were accepted by the BSN program. Although changing majors and colleges was difficult, it helped me appreciate the nursing profession even more. Initially it was difficult to find a job after completing the BSN because I lacked experience. However, once I found a hospital that was hiring new graduates, they hired me the same day that I interviewed. It took two months to find a hospital that was hiring in the area that I wanted to live; with perseverance and multiple applications, I was successful.

Q: What advice would you give someone who is considering this career?

A: Be able to deal with people at their worst. Most people are nice, but some are mean or rude. However, the work itself is rewarding when you see a smile on a patient's face when they are able to go home after extensive surgery, or when a patient cries tears of joy when they realize they will be okay. Be prepared for the worst, such as when a patient receives news of a terminal illness, and provide emotional support in the difficult times. Skills that are important are listening to patients and trusting your instincts. If you notice a change in the patient, inform the physician. I discovered an active heart attack even though the patient had no chest pain; my quick action prevented serious heart damage.

TABLE 11.3 Projections Data for Registered Nurses, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Registered nurses	2,751,000	3,190,300	439,300	16%

Earnings

Median annual wages of registered nurses were $66,640 in May 2014. Mean annual wages in the industries employing the largest numbers of registered nurses in May 2014 are shown in TABLE 11.4.

Related Occupations

Because of the number of specialties for RNs, and the variety of responsibilities and duties, many other healthcare occupations are similar in some aspects of their job. Some healthcare occupations with similar levels of responsibility that work under the direction of physicians or dentists are dental hygienists, diagnostic medical sonographers, emergency medical technicians and paramedics, LPNs, and physician assistants.

ADVANCED PRACTICE REGISTERED NURSES (APRNS)

Significant Points

- Advanced practice registered nurses (APRNs) —clinical nurse specialists, nurse anesthetists, nurse-midwives, and nurse practitioners—require a master's degree; most are also certified in a specialty area.
- Projected growth for APRNs is 31%, much faster than other occupations, as a result of greater numbers being insured because of the Affordable Care Act and greater health needs of the aging population.
- Changes in state laws governing APRN practice authority has allowed APRNs to perform more services without the direct supervision of a physician to meet primary care needs.
- Overall job opportunities are expected to be excellent, particularly in medically underserved rural and urban areas where there is a shortage of primary care physicians. In addition, APRNs can expect to be in demand as clinical specialists and consultants in hospitals and other healthcare systems because of advanced clinical training.

TABLE 11.4 Mean Annual Wages in the Industries Employing the Largest Numbers of Registered Nurses, May 2014

Government	$70,540
Hospitals	$68,490
Home healthcare services	$63,810
Nursing and residential care facilities	$59,840
Offices of physicians	$59,550

Work Description

Nurse anesthetists, nurse-midwives, nurse practitioners, and clinical nurse specialists, also referred to as advanced practice registered nurses (APRNs), coordinate patient care and provide primary and specialty health care. The scope of practice varies from state to state. APRNs work independently or in collaboration with physicians. In most states, they can prescribe medications, order medical tests, and diagnose health problems.

APRNs provide primary and preventative care and may specialize in care for certain groups of people, such as children, pregnant women, or patients with mental health disorders. APRNs who work with patients typically perform many of the same duties as RNs, gathering information about a patient's condition and taking action to treat or manage the patient's health. However, APRNs are also trained to perform many additional functions that are beyond the scope of the RN, including ordering and evaluating test results, referring patients to specialists, and diagnosing and treating injuries and illness. APRNs focus on patient-centered care, which means understanding a patient's concerns and lifestyle before choosing a course of action.

APRNs may also conduct research or teach the nursing staff about new policies or procedures. Others may provide consultation services based on a specific field of knowledge, such as oncology. Following are examples of the four main types of APRNs.

Certified Registered Nurse Anesthetists (CRNAs)

Certified registered nurse anesthetists (CRNAs) provide anesthesia and related care before, during, and after surgical, therapeutic, diagnostic, and obstetrical procedures. They also provide pain management and some emergency services. Before a procedure begins, nurse anesthetists discuss with a patient any medications the patient is taking as well as any allergies or illnesses the patient may have, so that anesthesia can be safely administered. CRNAs then give a patient general anesthesia to put the patient to sleep or regional or local anesthesia to numb an area of the body. They remain with the patient throughout a procedure to monitor vital signs and adjust the anesthesia as necessary.

Nurse anesthetists have practiced in the United States since providing care for wounded soldiers in the Civil War. Currently they work in all settings where anesthesia is delivered, either in collaboration with anesthesiologists or independently. These settings include hospital surgical suites and obstetrical delivery rooms; ambulatory surgical centers; offices of dentists, podiatrists, ophthalmologists, plastic surgeons and pain management specialists; and in healthcare facilities in the military, Public Health Services, and Veteran's Administration Hospitals and Clinics.[9] CRNAs are the sole providers of anesthesia in two-thirds of rural hospitals and in some states are providers in 100% of rural hospitals. CRNAs that practice in rural areas make it possible for these hospitals to offer surgical, obstetrical, and trauma care. As APRNs, they are given a high degree of autonomy and professional respect (FIGURE 11.3).[11]

Certified Nurse-Midwives (CNMs)

Certified nurse-midwives (CNMs) and **certified midwives (CMs)** provide care to women, including gynecological exams, family planning services, prenatal care, attendance in labor and delivery, and postpartum care. They may act as primary care providers for women and newborns. Many nurse-midwives provide wellness care, educating their patients on how to lead healthy lives by discussing topics such as nutrition and disease prevention. Nurse-midwives also provide care to their patients' partners for sexual or reproductive health issues.

Today, CNMs and their colleagues, CMs, provide family-centered primary health care to women throughout their reproductive lives. Skilled midwifery can reduce the need for high-tech interventions for most women in labor, but midwives also are trained in the latest scientific procedures to assist in normal deliveries and work in collaboration with physicians. CNM-attended births account for 10% of all spontaneous vaginal births in the United States, and 7% of all U.S. births; of these deliveries, 97% occur in hospitals, 2% in freestanding birth centers, and 1% at home. Nurse-midwives

FIGURE 11.3 Nurse anesthetists are the sole provider of anesthesia in some rural states.
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spend 10% of their time in the direct care of birthing women and their newborns. The remainder of patient care is for primary, preventive care in a wide variety of clinical settings, diagnosing and treating patients as well as referring them to a specialist when necessary.[10]

Midwifery began in the United States in the 1920s when British-educated women provided health care in the remote mountains of Kentucky; the Manhattan Midwifery School was established in New York City in 1925. Challenges to the practice of midwifery include restrictive legislation related to requirements for physician supervision, hospital delivery, and third-party reimbursement.[11]

Nurse Practitioners (NPs)

Nurse practitioners (NPs) serve as primary and specialty care providers, providing advanced nursing services to patients and their families, from newborns to the elderly. NPs assess patients, determine the best way to improve or manage a patient's health, and discuss ways to integrate health promotion strategies into a patient's life. They typically care for a certain population of people. For instance, NPs may work in adult and geriatric health, pediatric health, or psychiatry and mental health. Although the scope of their duties varies some by state, many nurse practitioners work independently, prescribe medications, and order laboratory tests. All NPs consult with physicians and other health professionals when needed (**FIGURE 11.4**).

NPs complete comprehensive physical examinations; diagnose and treat common acute illnesses and injuries such as colds and sprained ankles; provide immunizations; manage chronic diseases; order and interpret diagnostic tests including X-rays, ECGs, and laboratory tests; prescribe medications and therapies; and perform procedures and educate patients on a healthy lifestyle and management of chronic diseases.[12]

Clinical Nurse Specialists (CNSs)

Clinical nurse specialists (CNSs) provide direct patient care to a certain population of people, such as pediatric patients, within one of many nursing specialties, such as orthopedic nursing or oncology nursing—thus, a CNS might specialize, for example, in pediatric oncology. CNSs also provide indirect care by working with other nurses, healthcare teams, and various other staff to improve the quality of care that patients receive. They also work at the system or organizational level in hospitals or ambulatory centers to improve the quality of nursing care throughout a facility or system related to their specialty. The requirement for CNS credential is a master's degree. Those with a research doctorate may conduct research. CNS credentialing for RNs is available from the American Nursing Credentialing Center for clinical certification and the National League for Nursing for certification of nurse educators. These organizations are listed at the end of the chapter under *Additional Information.*

FIGURE 11.4 Nurse practitioners can specialize in gerontology.
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Work Environment

APRNs work in a variety of settings, including physicians' offices, hospitals, nursing care and assisted-living facilities, schools, and clinics. Nurse-midwives also work in birthing centers, and nurse anesthetists work in ambulatory surgery centers and in offices of dentists and podiatrists. APRNs often work in underserved urban or rural areas and may also travel long distances to help care for patients in places where there are not enough healthcare workers. APRNs perform healthcare research, teach in schools and universities, and serve in governmental agencies—health departments, the military, and Veterans Administration hospitals and clinics.

In addition, NPs may work in worksite employee health centers and for healthcare technology companies (e.g., pharmaceutical manufacturers). Approximately 15% of all NPs have their own private practices, and others manage outpatient health centers.[12] APRNs' work can be both physically and emotionally demanding. Some APRNs spend much of their day on their feet. They are vulnerable to back injuries because they must lift and move patients. APRN work can also be stressful, as they may make critical decisions about care.

Because of the environments in which they work, APRNs may come in close contact with infectious diseases and potentially harmful drugs. Therefore, they must follow strict, standardized guidelines to guard against diseases and other dangers, such as accidental needle sticks.

APRNs working in physicians' offices or schools typically work during normal business hours. Those working in hospitals and various other healthcare facilities may work in shifts to provide round-the-clock patient care. They may work nights, weekends, and holidays. Nurse anesthetists and nurse-midwives may also be on call.

Employment Opportunities

Employment of APRNs is expected to grow 31% from 2014 to 2024, much faster than the average for all occupations.

Growth will occur because of an increase in the demand for healthcare services. Several factors, including healthcare legislation and the resulting increase in newly insured persons, an increased emphasis on preventative care, and the large, aging baby-boom population, will contribute to this demand.

APRNs can perform many of the same services as physicians and may be needed to provide primary care services. As states change their laws governing APRN practice authority, APRNs are being allowed to perform more services. They are also becoming more widely recognized by the public as a source for primary healthcare.

APRNs will also be needed to care for the aging baby-boom generation. As Baby Boomers age, they will experience ailments and complex conditions that require medical care. APRNs will be needed to keep these patients healthy and to treat the growing number of patients with chronic conditions. The percentage of APRNs in different work settings in 2014 is shown in TABLE 11.5.

Education and Legal Requirements

APRNs must earn a master's degree from an accredited program. These programs include both classroom education and clinical experience. APRNs must also be licensed RNs in their state and pass a national certification exam.

Education and Training

Nurse anesthetists, nurse-midwives, clinical nurse specialists, and nurse practitioners must earn a master's degree from an accredited program. These programs include both classroom education and clinical experience. Courses in anatomy, physiology, and pharmacology are common as well as coursework specific to the chosen APRN role. A master's degree is the most common form of entry-level education, although many APRNs have a Doctor of Nursing Practice (DNP) or a PhD.

Most APRN programs prefer candidates who have a bachelor's degree in nursing. However, some schools offer bridge programs for registered nurses with an associate's degree or diploma in nursing. Graduate-level programs are also available for individuals who did not obtain a bachelor's degree in nursing but in a related health science field. These programs prepare the student for the RN licensure exam in addition to the APRN curriculum.

In 2015 there were 115 accredited nurse anesthesia programs in the United States at more than 2,500 active clinical sites; 37 award a doctoral degree for entry-level practice. Nurse anesthesia programs range from 24 to 36 months in length. All programs include clinical training in university-based or large community hospitals.[13]

There are 39 programs for midwifery accredited by the **American College of Nurse-Midwives (ACNM)**. A bachelor's degree is required for application. Most graduate programs for nurse-midwives have a limited number of spaces to admit new students each year because of the intensive faculty to student ratio needed to train quality nurse-midwives. Therefore, prospective students may not be accepted the first time they apply.[14]

There were over 400 nurse practitioner programs in the United States as of 2013. The American Association of Colleges of Nursing lists programs that offer a doctorate in nursing practice (DNP). The American Association of Nurse Practitioners website lists all nurse practitioner programs and tips for applying to programs. For more information about NP programs go to the American Association of Nurse Practitioners website listed at the end of the chapter under *Additional Information*.

CNSs must earn a master's degree in nursing, which usually requires two years. CNSs who conduct research typically need a doctoral degree.

TABLE 11.5 Work Settings with the Largest Number of Advanced Practice Registered Nurses, 2014

Offices of physicians	48%
Hospitals	28%
Outpatient care centers	7%
Offices of other health practitioners	3%

Licensure

Most states recognize all of the APRN roles. In states that recognize some or all of the roles, APRNs must be licensed as a RN, complete an approved graduate-level program, and pass a national certification exam. Each state's board of nursing can provide details.

The **Consensus Model for APRN Regulation**, a document developed by a wide variety of professional nursing organizations, including the National Council of State Boards of Nursing, aims to standardize APRN requirements. The model recommends all APRNs complete a graduate degree from an accredited program, be a licensed RN, pass a national certification exam, and earn a second license specific to one of the APRN roles specific to a certain group of patients, for example gerontology.

Certification and Other Requirements

Certification is required in the vast majority of states to use an APRN title. Certification is used to show proficiency in an APRN role and is often a requirement for state licensure. The **National Board of Certification and Recertification for Nurse Anesthetists (NBCRNA)** offers the National Certification Examination (NCE). CRNAs must recertify

every two years, which includes 40 hours of continuing education. The **American Midwifery Certification Board** offers the Certified Nurse-Midwife (CNM) and Certified Midwife (CM) designations. Individuals with these designations must recertify every five years.

There are a number of certification exams for NPs and CNSs because of the large number of populations with which NPs may work and the number of specialty areas in which they may practice. Certifications are available from a number of professional organizations, including the American Nurses Credentialing Center. NPs can also obtain certification through the **American Academy of Nurse Practitioners Certification Program** (Figure 11.4).

Personal qualities that are important for all APRNs include the ability to communicate with patients and other health professionals to ensure that the appropriate course of action is followed. Critical-thinking skills are necessary to assess the patient's status quickly, to determine appropriate treatment, and to identify when consultation with other health professionals is needed. APRNs need to have excellent interpersonal skills and demonstrate compassion to successfully work with patients, families, and other health professionals and to be able to work as part of a team. Other important qualities are to be detail oriented and able to notice changes in a patient's status; also needed is resourcefulness—being able to find answers to diagnose and treat health problems. Many APRNs lead teams of healthcare workers and need to be able to successfully lead the team.

Advancement

Because the APRN designation is in itself an advancement of one's career, many APRNs choose to remain in this role for the duration of their career. Some APRNs may take on managerial or administrative roles, while others go into academia. Further advancement for APRNs may be achieved by earning a doctoral degree and conducting independent research or working in an inter professional research team.

Employment Trends

Greater numbers of individuals with access to health insurance because of federal health insurance reform legislation will increase the demand for APRNs in outpatient settings. APRNs can perform many of the same services as physicians and may be needed to meet primary care needs.

As states change their laws governing APRN practice authority, APRNs are being allowed to perform more services and be able to receive reimbursement from Medicare, Medicaid, and private insurance. They are also becoming more widely recognized by the public as a source for primary healthcare.

APRNs will also be needed to care for the aging baby-boom generation. As Baby Boomers age, they will experience ailments and complex conditions that require medical care. APRNs will be needed to keep these patients healthy and to treat the growing number of patients with chronic conditions.

Employment Change

Employment of nurse anesthetists, nurse-midwives, and nurse practitioners is expected to grow 31% from 2014 to 2024, much faster than the average for all occupations. Growth will occur because of an increase in the demand for healthcare services. Several factors, including healthcare legislation and the resulting newly insured, an increased emphasis on preventative care, and the large, aging baby-boom population will contribute to this demand.

Job Prospects

Overall, job opportunities for APRNs are expected to be excellent. APRNs will be in high demand, particularly in medically underserved areas such as inner cities and rural areas. The demand will be greatest for NPs and CNMs/CMs who work in primary care settings because of a shortage of primary care physicians. In addition, CRNAs are in demand in rural areas and NPs and CNS are in demand to provide consultation and support as a clinical specialist in hospitals and long-term care facilities. Job opportunities may also exist from attrition. TABLE 11.6 provides projected needs for APRNs through 2024.

TABLE 11.6 Projections Data for Advanced Practice Registered Nurses, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Nurse anesthetists, nurse midwives, and nurse practitioners	170,400	223,800	53,400	31%
Nurse anesthetists	38,200	45,600	7,400	19%
Nurse-midwives	5,300	6,600	1,300	25%
Nurse practitioners	126,900	171,700	44,700	35%

TABLE 11.7 Median Annual Salary for Advanced Practice Registered Nurses, May 2014

Nurse anesthetists	$153,780
Nurse-midwives	$96,970
Nurse practitioner	$95,350

Data from: Bureau of Labor Statistics. U.S. Department of Labor. *Occupational Employment and Wages*–May 2014. Internet: http://www.bls.gov/oes/#data/

Earnings

The median annual wage for nurse anesthetists is higher than for nurse-midwives or nurse practitioners; however, all APRNs command higher salaries than RNs because of advanced education and increased responsibilities. Median salaries for 2014 are listed in TABLE 11.7.

Related Occupations

Other healthcare occupations with similar educational requirements and job responsibilities are physicians and surgeons, physician assistants, audiologists, speech therapists, occupational therapists, physical therapists, and RNs.

LICENSED PRACTICAL AND LICENSED VOCATIONAL NURSES

Significant Points

- Most training programs last about one year and are offered by vocational or technical schools, or community or junior colleges.
- Overall job prospects are expected to be very good, but job outlook varies by industry.
- Replacement needs will be a major source of job openings, as many workers leave the occupation permanently.

Work Description

Licensed practical nurses (LPNs), or **licensed vocational nurses (LVNs)**, care for people who are sick, injured, convalescent, or disabled under the direction of physicians and registered nurses. The nature of the direction and supervision required varies by state and job setting.

LPNs care for patients in many ways. Often, they provide basic bedside care. Many LPNs measure and record patients' vital signs such as height, weight, temperature, blood pressure, pulse, and respiration. They also prepare and give injections and enemas, monitor catheters, dress wounds, and give alcohol rubs and massages. To help keep patients comfortable, they assist with bathing, dressing, and personal hygiene, moving in bed, standing, and walking. They might also feed patients who need help eating. Experienced LPNs may supervise nursing assistants and aides (FIGURE 11.5).

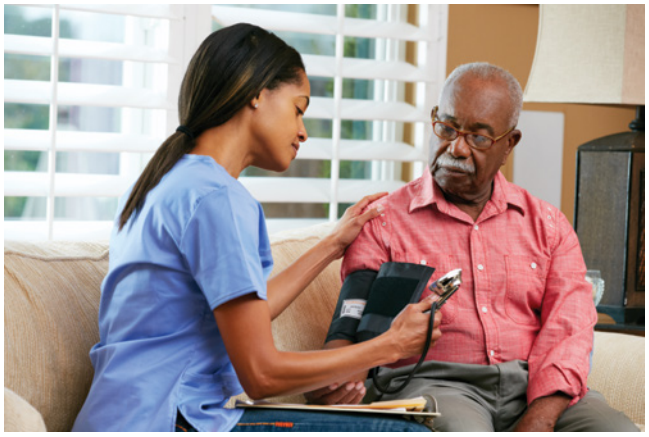

FIGURE 11.5 LPNs take vital signs, including blood pressure.
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As part of their work, LPNs collect samples for testing, perform routine laboratory tests, and record food and fluid intake and output. They clean and monitor medical equipment. Sometimes, they help physicians and registered nurses perform tests and procedures. Some LPNs help to deliver, care for, and feed infants.

LPNs also monitor their patients and report adverse reactions to medications or treatments. They gather information from patients, including their health history and how they are currently feeling. They may use this information to complete insurance forms, pre-authorizations, and referrals, and they share information with RNs and doctors to help determine the best course of care for a patient. LPNs often teach family members how to care for a relative or teach patients about good health habits.

Most are generalists and will work in any area of health care. However, some work in a specialized setting, such as a nursing or assisted-living facility, a doctor's office, or in home health care. LPNs in nursing care facilities help to evaluate residents' needs, develop care plans, and supervise the care provided by nursing aides. In doctors' offices and clinics, they may be responsible for making appointments, keeping records, and performing other clerical duties. LPNs who work in home health care may prepare meals and teach family members simple nursing tasks. In some states, LPNs are permitted to administer prescribed medicines, start intravenous fluids, and provide care to ventilator-dependent patients.

Work Environment

Employment projections are that LPNs will work primarily in homecare and ambulatory settings as well as nursing care and assisted-living facilities. LPNs/LVNs often wear scrubs,

a type of medical clothing that usually consists of a shirt and drawstring pants.

Nurses must often be on their feet for much of the day and may have to lift patients who have trouble moving in bed, standing, or walking. These duties can be stressful, as can dealing with ill and injured people. Most work full time, although about 20% worked part time in 2012. Many work nights, weekends, and holidays, because medical care takes place at all hours. They may be required to work shifts of longer than eight hours.

LPNs/LVNs may face hazards from caustic chemicals, radiation, and infectious diseases, and are subject to back injuries when moving patients. They often must deal with the stress of heavy workloads. In addition, the patients for whom they care may be confused, agitated, or uncooperative.

Employment Opportunities

LPNs/LVNs held about 719,900 jobs in 2014. About 38% worked in nursing and assisted-living facilities, 17% worked in hospitals, 13% in physicians' offices, and 11% in home healthcare.

Educational and Legal Requirements

Most practical nursing training programs last about one year and are offered by vocational and technical schools or community or junior colleges. LPNs must be licensed to practice.

Education and Training

LPNs must complete a state-approved non-degree training program in practical nursing to be eligible for licensure. Contact your state's board of nursing for a list of approved programs. Most training programs are available from technical and vocational schools or community colleges. Other programs are available through high schools, hospitals, and colleges and universities. A high school diploma or its equivalent usually is required for entry, although some programs accept candidates without a diploma, and some programs are part of a high school curriculum.

Most year-long LPN programs include both classroom study and supervised clinical practice (patient care). Classroom study covers basic nursing concepts and subjects related to patient care, including anatomy, physiology, medical-surgical nursing, pediatrics, obstetrics nursing, pharmacology, nutrition, and first aid. Clinical practice usually is in a hospital but sometimes includes other settings.

Licensure

The **National Council Licensure Examination (NCLEX-PN)**, is required in order to obtain licensure as an LPN. The exam is developed and administered by the **National Council of State Boards of Nursing**. The NCLEX-PN is a computer-based exam and varies in length. The exam covers four major client-needs categories: safe and effective care environment, health promotion and maintenance, psychosocial integrity, and physiological integrity. Eligibility for licensure may vary by state; for details, contact your state's board of nursing.

Other Qualifications

LPNs should have a caring, sympathetic nature. They should be emotionally stable because working with the sick and injured can be stressful. They also need to be observant and have good decision-making and communication skills. As part of a healthcare team, they must be able to follow orders and work under close supervision.

LPNs should enjoy learning because some states and/or employers require continuing education credits at regular intervals. Career-long learning is a distinct reality for LPNs.

Advancement

In some employment settings, such as nursing homes, LPNs can advance to become charge nurses who oversee the work of other LPNs and nursing aides. LPNs may become credentialed in specialties like IV therapy and gerontology through the **National Federation of Licensed Practical Nurses**. Some LPNs also choose to become RNs through LPN-to-RN training programs.

Employment Trends

Employment of LPNs is projected to grow much faster than average. Overall job prospects are expected to be very good, but job outlook varies by industry. The best job opportunities will occur in nursing care facilities and home healthcare services.

Employment Change

Employment of LPNs is expected to grow by 16% between 2014 and 2024, much faster than the average for all occupations, in response to the long-term care needs of an increasing elderly population and the general increase in demand for healthcare services.

Demand for LPNs will be driven by the increase in the share of the older population. Older persons have an increased incidence of injury and illness, which will increase their demand for healthcare services. In addition, with better medical technology, people are living longer, increasing the demand for long-term health care. Job growth will occur over all healthcare settings, but especially those that service the geriatric population like nursing care facilities, community care facilities, and home healthcare services.

In order to contain healthcare costs, many procedures once performed only in hospitals are being performed in physicians' offices and in outpatient care centers, largely because of advances in technology. As a result, the number of LPNs should increase faster in these facilities than in

TABLE 11.8 Projections Data for Licensed Practical and Licensed Vocational Nurses, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Licensed practical and licensed vocational nurses	719,900	837,200	117,300	16%

hospitals. Nevertheless, hospitals will continue to demand the services of LPNs.

Job Prospects

In addition to projected job growth, job openings will result from replacement needs, as many workers retire. Very good job opportunities are expected. Rapid employment growth is projected in most healthcare industries, with the best job opportunities occurring in nursing care facilities and in home healthcare services. There is a perceived inadequacy of available health care in many rural areas, so LPNs willing to locate in rural areas should have good job prospects. Projections data from the National Employment Matrix are shown in TABLE 11.8.

Earnings

Median annual wages of LPNs/LVNs were $42,490 in May 2014. Mean annual wages in the industries employing the largest numbers of LPNs/LVNs in May 2014 are shown in TABLE 11.9.

Related Occupations

LPNs work closely with people while helping them. Other healthcare occupations that work closely with patients and have similar educational and experience requirements include: surgical technicians, physical therapy assistants and aides, occupational therapy assistants and aides, nursing assistants and aides, psychiatric technicians and aides and RNs.

TABLE 11.9 Mean Annual Wages in the Industries Employing the Largest Numbers of Licensed Practical and Licensed Vocational Nurses, May 2014

Nursing and residental care facilities	$43,700
Home healthcare services	$43,670
Government	$43,480
Hospitals	$41,400
Offices of physicians	$38,150

Additional Information

For information on baccalaureate and graduate nursing education, nursing career options, and financial aid, contact:

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

For additional information on registered nurses, including credentialing, contact:

- American Nurses Association, 8515 Georgia Ave., Suite 400, Silver Spring, MD 20910. Internet: http://nursingworld.org/

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

- National League for Nursing, The Watergate, 2600 Virginia Avenue NW, Eighth Floor, Washington, DC 20037. Internet: www.nln.org.

For Information on loan repayment for nurses contact:

- National Health Services Corps. *Bureau of Health Workforce Loan Repayment Program for Nurses.* Internet: http://www.hrsa.gov/loanscholarships/repayment/nursing/index.html

For information on becoming certified in a nursing specialty, including pediatric nursing, contact:

- Pediatric Nursing Certification Board, 9605 Medical Center Drive, Suite 250, Rockville, MD. 20850. Internet: https://www.pncb.org/ptistore/control/about/contact

For information on accredited educational programs to become a certified registered nurse anesthetist (CRNA) contact:

- Council on Accreditation of Nurse Anesthesia Educational Programs (COA), 222 S. Prospect Avenue, Park Ridge, Ill. 60068. Internet: http://home.coa.us.com/accredited-programs/Pages/CRNA-School-Search.aspx

For information on the National Council Licensure Examination for registered nurses (NCLEX-RN) and licensed practical nurses (NCLEX-PN) and a list of individual state boards of nursing, contact:

- National Council of State Boards of Nursing, 111 E. Wacker Dr., Suite 2900, Chicago, IL 60601. Internet: http://www.ncsbn.org/

For a list of accredited clinical nurse specialist programs, contact:

- American Nurses Credentialing Center, 8515 Georgia Ave, Suite 400, Silver Spring, MD 20910. Internet: http://nursecredentialing.org/Certification
- National Association of Clinical Nurse Specialists, 100 North 20th Street, 4th Floor, Philadelphia, PA 19103 Internet: http://www.nacns.org/

For additional information on registered nurses in all fields and specialties and to search for jobs in nursing, contact:

- American Society of Registered Nurses, 1001 Bridgeway, Suite 233, Sausalito, CA 94965. Internet: http://www.asrn.org/

For information on nurse anesthetists, including a list of accredited programs, contact:

- American Association of Nurse Anesthetists, 222 S. Prospect Ave., Park Ridge, IL 60068. Internet: http://www.aana.com/

For information on becoming certified as a certified registered nurse anesthetist contact:

- National Board of Certification & Recertification for Nurse Anesthetists, 8725 W. Higgins Rd., Suite 525, Chicago, IL 60631. Internet: http://www.nbcrna.com/Pages/default.aspx

For information on a listed of accredited programs in midwifery:

- American College of Nurse-Midwives. 8403 Colesville Road, Suite 1550, silver Spring, MD 20910. Internet: http://www.midwife.org/Programs-Accredited-by-ACME

For information on becoming certified as a nurse-midwife contact:

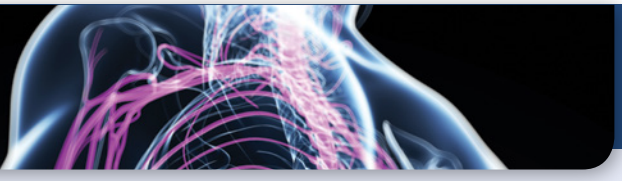
- American Midwifery Certification Board, 849 International Drive, Suite 120, Linthicum, MD, 21090. Internet: http://www.amcbmidwife.org/

For information on nurse practitioners, including a list of accredited programs and certification, contact:

- American Academy of Nurse Practitioners, P. O. Box 12846, Austin, TX 78711. Internet: http://www.aanp.org/

For information about practical nursing and specialty credentialing, contact the following organizations:

- National Association for Practical Nurse Education and Service, Inc., 1940 Duke St., Suite 200, Alexandria, VA 22314. Internet: http://www.napnes.org
- National Federation of Licensed Practical Nurses, Inc., 605 Poole Dr., Garner, NC 27529. Internet: http://www.nflpn.org



LEARNING PORTFOLIO

Issues for Discussion

1. Review the five-minute video that describes the *Campaign for Action: Transforming Health Care Through Nursing*, a partnership of the Institute of Medicine, Robert Wood Johnson Foundation and the AARP to strengthen the nursing career (Internet: http://campaignforaction.org/video/video-highlighting-campaign-action). What are two reasons for the increased demand for nurses? What are three recommendations of the Institute of Medicine to advance the profession of nursing?
2. Review the video, *Be a Nurse*, from the Washington Center for Nursing (Internet: http://campaignforaction.org/video/be-nurse-video-washington-center-nursing). List the roles and responsibilities of four different nurses described in the video: public health nurse, school nurse, nurse educator, and military nurse. What were the recommendations for reducing health disparities?
3. Review the video, *The Nurse Practitioner Will See You Now*, from Consumer Reports.org. Internet: http://www.consumerreports.org/cro/magazine/2013/08/the-nurse-practitioner-will-see-you-now/index.htm. What are some of the barriers for nurse practitioners to practice independently?
4. What are the advantages and disadvantages of each of the nursing professions discussed in this chapter: LPN/LVN, RN, APRN?
5. Choose one nursing profession and select a training program in your state. What are the entrance requirements? What is the length of the training program? What is the cost of the program? Are there scholarships or loans available for students?

Enrichment Activities

1. Review the YouTube video, *UW Systems — A Look at the Work of a Nurse Educator* (Internet: https://youtu.be/S8ijjUZdBvo|).
2. View the YouTube video, *CRNAs: The Future of Anesthesia Care Today* that describes the work of a certified registered nurse anesthetist (CRNA) (Internet: https://www.youtube.com/watch?v=BF0mnxAeIr4).
3. View the four-minute video, *Midwives & the Care They Provide*, from the American College of Nurse-Midwives (Internet: https://www.youtube.com/watch?v=MLVwdmlZU_8). What are some of the benefits of using a certified nurse-midwife for women?

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CHAPTER 12

Dentistry*

Key Terms

American Dental Association (ADA)
Dental assistant
Dental ceramacist
Dental hygienist
Dental laboratory technician
Dental public health specialist
Dentist
Endodontist
Oral and maxillofacial surgeon
Oral pathologist
Orthodontist
Pediatric dentist
Periodontist
Pit and fissure sealants
Prosthodontist

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

DENTISTS

Significant Points

- About three out of four dentists are solo practitioners.
- Dentists must graduate from an accredited dental school and pass written and practical examinations; competition for admission to dental school is keen.
- Faster than average employment growth is projected.
- Job prospects should be good, reflecting the need to replace the large number of dentists expected to retire.

Work Description

Dentists diagnose and treat problems with teeth and tissues in the mouth, along with giving advice and administering care to help prevent future problems. They provide instruction on diet, brushing, flossing, the use of fluorides, and other aspects of dental care. They remove tooth 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 also administer anesthetics and write prescriptions for antibiotics and other medications.

Dentists use a variety of equipment, including X-ray machines, drills, mouth mirrors, probes, forceps, brushes, and scalpels. Lasers, digital scanners, and other computer technologies also may be used. Dentists wear masks, gloves, and safety glasses to protect themselves and their patients from infectious diseases.

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

Most dentists are general practitioners, handling a variety of dental needs. Other dentists practice in any of nine specialty areas. **Orthodontists**, the largest group of specialists, straighten teeth by applying pressure to the teeth with braces or other appliances. The next-largest group, **oral and maxillofacial surgeons**, operates on the mouth, jaws, teeth, gums, neck, and head. The remainder may specialize as **pediatric dentists** (focusing on dentistry for children and special-needs patients); **periodontists** (treating gums and bone supporting the teeth); **prosthodontists** (replacing missing teeth with permanent fixtures, such as crowns and bridges, or with removable fixtures such as dentures); **endodontists** (performing root-canal therapy); **oral pathologists** (diagnosing oral diseases); oral and maxillofacial radiologists (diagnosing diseases in the head and neck through the use of imaging technologies); or **dental public health specialists** (promoting good dental health and preventing dental diseases within the community). An example of a pediatric dentist working on a patient is seen in FIGURE 12.1.

FIGURE 12.1 Dental examination of child.
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Work Environment

Most dentists are solo practitioners, meaning that they own their own businesses and work alone or with a small staff. Some dentists have partners, and a few work for other dentists as associate dentists.

Most dentists work four or five days a week. Some work evenings and weekends to meet their patients' needs. The number of hours worked varies greatly among dentists. Most full-time dentists work between 35 and 40 hours a week. However, others, especially those who are trying to establish a new practice, work more hours. Also, experienced dentists often work fewer hours. It is common for dentists to continue in part-time practice well beyond the usual retirement age.

Dentists usually work in the safety of an office environment. However, work-related injuries can occur, such as those resulting from the use of handheld tools when performing dental work on patients.

Employment Opportunities

Dentists held about 151,500 jobs in 2014. Employment was distributed among general practitioners and specialists, as shown in TABLE 12.1. Approximately 15% of all dentists were specialists. About 28% of dentists were self-employed and not incorporated. Very few salaried dentists worked in

TABLE 12.1 Employment Distribution Among General Practitioners and Specialists

Specialties	Distribution
Dentists, general	129,000
Orthodontists	8,200
Oral and maxillofacial surgeons	6,800
Prosthodontists	800
Dentists, all other specialists	6,700

hospitals and offices of physicians. Almost all dentists work in private practice. According to the **American Dental Association (ADA)**, about three out of four dentists in private practice are solo proprietors, and almost 15% belong to a partnership.

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, candidates must graduate from an accredited dental school and pass written and practical examinations.

Education and Training

In 2016, there were 66 dental schools in the United States accredited by the ADA's Commission on Dental Accreditation.[1] Dental schools require a minimum of two years of college-level, pre-dental education prior to admittance. Most dental students have at least a bachelor's degree before entering dental school, although a few applicants are accepted to dental school after two or three years of college and complete their bachelor's degree while attending dental school.

High school and college students who want to become dentists should take courses in biology, chemistry, physics, health, and mathematics. College undergraduates planning on applying to dental school are required to take many science courses. Because of this, some choose a major in a science, such as biology or chemistry, whereas others take the required science coursework while pursuing a major in another subject.

All dental schools require applicants to take the Dental Admissions Test (DAT).[2] When selecting students, schools consider scores earned on the DAT, applicants' grade point averages, and information gathered through recommendations and interviews. Competition for admission to dental school is keen.

Dental school usually lasts four academic years. Studies begin with classroom instruction and laboratory work in science, including anatomy, microbiology, biochemistry, and physiology. Beginning courses in clinical sciences, including laboratory techniques, are also completed. During the last two years, students treat patients, usually in dental clinics, under the supervision of licensed dentists. Most dental schools award the degree of Doctor of Dental Surgery (DDS). Others award an equivalent degree, Doctor of Dental Medicine (DMD).

Licensure

Licensing is required to practice as a dentist. In most states, licensure requires passing written and practical examinations in addition to having a degree from an accredited dental school. Candidates may fulfill the written part of the state licensing requirements by passing the National Board Dental Examinations. Individual states or regional testing agencies administer the written or practical examinations.

Individuals can be licensed to practice any of the nine recognized specialties in all 50 states and the District of Columbia. Requirements include two to four years of postgraduate education and, in some cases, the completion of a special state examination. A postgraduate residency term also may be required, usually lasting up to two years. Most state licenses permit dentists to engage in both general and specialized practice.

Other Qualifications

Dentistry requires diagnostic ability and manual skills. Dentists should have good visual memory; excellent judgment regarding space, shape, and color; a high degree of manual dexterity; and scientific ability. Good business sense, self-discipline, and good communication skills are helpful for success in private practice.

Advancement

Dentists and aspiring dentists who want to teach or conduct research full time usually spend an additional two to five years in advanced dental training in programs operated by dental schools or hospitals. Many private practitioners also teach part time, including supervising students in dental school clinics.

Some dental school graduates work for established dentists as associates for one to two years to gain experience and save money to equip an office of their own. Most dental school graduates, however, purchase an established practice or open a new one immediately after graduation.

Employment Opportunities

Employment is projected to grow faster than average. Job prospects should be good, reflecting the need to replace the large number of dentists expected to retire.

Employment Change

The employment of dentists is projected to grow by 18% through 2024, which is faster than the average for all occupations. The demand for dental services is expected to continue to increase. The overall U.S. population is growing, and the elderly segment of the population is growing even faster; these phenomena will increase the demand for dental care. Many members of the baby-boom generation will need complicated dental work. In addition, older adults 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 an overall increase in the dental health of the public over the last few decades. Recently, some private insurance providers have increased their dental coverage. If this trend continues,

TABLE 12.2 Some Projection Data for Dentists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Dentists	151,500	178,200	26,700	18
Dentists, general	129,000	152,300	23,300	18
Oral and maxillofacial surgeons	6,800	8,000	1,200	18
Orthodontists	8,200	9,700	1,500	18
Prosthodontists	800	1000	200	18
Dentists, all other specialists	6,700	7,300	600	9

people with new or expanded dental insurance will be more likely to visit a dentist than in the past. Also, although they are currently a small proportion of dental expenditures, cosmetic dental services, such as providing teeth-whitening treatments, will become increasingly popular. This trend is expected to continue as new technologies allow these procedures to take less time and be much less invasive.

Nonetheless, the employment of dentists is not expected to keep pace with the increased demand for dental services. Productivity increases from new technology, as well as the tendency to assign more tasks to dental hygienists and assistants, will allow dentists to perform more work than they have in the past. As their practices expand, dentists are likely to hire more hygienists and dental assistants to handle routine services.

Demand for dentists with minority backgrounds is seen by the ADA as critical. The ADA indicates that only 12% of students entering dental school come from a minority background, while minorities make up 25% of the general population. Data from the ADA shows that minority dentists treat the highest number of minority patients. As underrepresented groups constitute a larger percentage of the population over time, the ADA hopes that dentists from a minority background will work to eliminate barriers to oral care. [3]

Dentists will increasingly provide care and instruction aimed at preventing the loss of teeth, rather than simply providing treatments such as fillings. Improvements in dental technology also will allow dentists to offer more effective and less painful treatment to their patients.

Job Prospects

As an increasing number of dentists from the baby-boom generation reach retirement age, many of them will retire or work fewer hours and stop taking on new patients. Furthermore, the number of applicants to apply to, and graduate from, dental schools has increased in recent years. Job prospects should be good, because younger dentists will be able to take over the work of older dentists who retire or cut back on hours, as well as provide dental services to accommodate the growing demand.

Demand for dental services tends to follow the business cycle, primarily because these services usually are paid for either by the patient or by private insurance companies. As a result, during slow times in the economy, demand for dental services can decrease; consequently, dentists may have difficulty finding employment, or if already in an established practice, they may work fewer hours because of reduced demand. TABLE 12.2 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual wages of salaried general dentists were $170,110 in May 2014. Earnings vary according to number of years in practice, location, hours worked, and specialty. Self-employed dentists in private practice tend to earn more than salaried dentists.

Dentists who are salaried often receive benefits paid by their employer, with health insurance and malpractice insurance being among the most common. However, like other business owners, self-employed dentists must provide their own health insurance, life insurance, retirement plans, and other benefits.

Related Occupations

Dentists examine, diagnose, prevent, and treat diseases and abnormalities. Other workers who perform similar tasks include chiropractors, optometrists, physicians and surgeons, podiatrists, and veterinarians.

Additional Information

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

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

For information on admission to dental schools, contact:

- American Dental Education Association, 1400 K St. NW, Suite 1100, Washington, DC 20005. Internet: http://www.adea.org

For more information on general dentistry or on a specific dental specialty, contact:

- Academy of General Dentistry, 211 East Chicago Ave., Suite 900, Chicago, IL 60611. Internet: http://www.agd.org
- American Association of Orthodontists, 401 North Lindbergh Blvd., St. Louis, MO 63141. Internet: http://www.braces.org
- American Association of Oral and Maxillofacial Surgeons, 9700 West Bryn Mawr Ave., Rosemont, IL 60018. Internet: http://www.aaoms.org
- American Academy of Pediatric Dentistry, 211 East Chicago Ave., Suite 1700, Chicago, IL 60611. Internet: http://www.aapd.org
- American Academy of Periodontology, 737 North Michigan Ave., Suite 800, Chicago, IL 60611. Internet: http://www.perio.org
- American Academy of Prosthodontists, 211 East Chicago Ave., Suite 1000, Chicago, IL 60611. Internet: http://www.prosthodontics.org
- American Association of Endodontists, 211 East Chicago Ave., Suite 1100, Chicago, IL 60611. Internet: http://www.aae.org
- American Academy of Oral and Maxillofacial Radiology, P.O. Box 1010, Evans, GA 30809. Internet: http://www.aaomr.org/
- American Association of Public Health Dentistry, 3085 Stevenson Dr., Suite 200, Spring field, IL 62703. Internet: http://www.aaphd.org

People 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.

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

DENTAL HYGIENISTS

Significant Points

- A degree from an accredited dental hygiene school and a state license are required for this job.
- Dental hygienist ranks among the fastest-growing occupations.
- Job prospects are expected to be favorable in most areas, but strong competition for jobs is likely in some areas.
- About half of all dental hygienists work part time, and flexible scheduling is a distinctive feature of this job.

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 tartar, 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. Dental hygienists often wear safety glass, surgical masks, and gloves to protect themselves and their patients from disease, as seen in FIGURE 12.2.

FIGURE 12.2 Dental hygienist assisting in care.

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Professional Profiles

Name: Chelsea, RDH
Title: Dental Hygienist
Education: AAS in Dental Hygiene

Q: Tell us about your job and the organization in which you work.

A: I'm a dental hygienist. I work with a general dentist in a suburban area (population 47,000 people). The office I work at is busy, producing $1–2 million each year. It is state of the art; we try to stay up to date on the newest technology. There are six treatment rooms. I am a full-time hygienist and we have three part-time hygienists.

I have worked for this dental practice for two years, but I have worked at this office for one year. My dental practice was able to transfer me when I moved from one state to another because it had offices in both states.

Q: Describe a typical work day.

A: I work Monday through Friday with varying hours. Some days I see patients as early as 7 AM, some days I see patients until 7 PM. I usually work 38 hours per week. I see a wide variety of patients ranging from 3 years old to 101 years old, from different cultures and walks of life. I perform a mixture of different services to my patients: child prophylaxis cleanings, adult prophylaxis cleanings, scaling and root planing, laser bacterial reduction for periodontal treatment, antibiotic placement for periodontal treatment, sealant placement on adults and children, fluoride treatments, and desensitizer treatments.

Q: Why did you choose this profession, and what do you like most?

A: I chose this profession because I was amazed by the results I got from orthodontic treatment. Correcting my crowded and crooked teeth improved my self-esteem—after that, the dental world fascinated me. I went to college to pursue hospitality management, this right in the midst of the recession. I remember during my first semester an instructor was brutally honest when explaining that the industry was struggling, I realized I should pursue a career that was always going to be needed—health care. Since I was already fascinated by teeth, it was a no-brainer that I should consider a career in dentistry. After researching different dental careers, I chose dental hygiene because it would allow me to work with a variety of different people while allowing me to make a difference in someone's life and health.

What I like most about this profession is seeing an improvement in the periodontal health and overall health of my patients. There is nothing more satisfying than when a patient is able to save their teeth because of the oral hygiene instructions I taught them and treatment I performed (SRP, laser, Arestin). The relationships and trust that I form with my patients is the best part of my job.

Q: What part of your training prepared you for your position?

A: The part that most prepared me was the dental hygiene clinic at my college. The dental hygiene clinic is the only dental hygiene clinic in the area that is completely free. We would see a variety of patients for prophylaxis cleanings and periodontal treatment. The periodontal cases I saw there were some of the most advanced periodontal cases I've seen. It was helpful to treat those advanced cases with the hands-on support and instruction from the instructors that had been practicing dental hygiene for many years.

Q: What obstacles have you faced?

A: I did face obstacles during the final stages of getting licensed to practice dental hygiene. I took three exams to become licensed in my state: Jurisprudence, Clinical Exam, Written Exam. I passed the Jurisprudence and Clinical Exams with 100% and 98%. However, I failed the written test by 1%. Failing that test was a huge letdown; it caused me to question the path I was on and whether or not I should be a hygienist. I scheduled to take the test again, studied nonstop, studied with other hygienists that I went to school with—and I passed. I feel I value my dental hygiene license more because of the obstacles I faced.

Q: What advice would you give to someone considering this career?

A: Follow other hygienists to ensure that this is a career you would enjoy. Volunteer as much as possible with groups like Give Kids A Smile. Start networking immediately; this will help out tremendously when looking for a job.

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-lit 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 the 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

Dental hygienists held about 200,500 jobs in 2014. Because holding multiple jobs is common in this field, the number of jobs exceeds the number of hygienists. About 51% of dental hygienists worked part time. Almost all jobs for dental hygienists—about 96%—were in offices of dentists. A very small number worked for employment services, in physicians' offices, or in other industries.

Educational and Legal Requirements

Prospective dental hygienists must become licensed in the state in which they wish to practice. A degree from an accredited dental hygiene school is required along with licensure examinations.

Education and Training

A high school diploma and college entrance test scores are usually required for admission to a dental hygiene program. High school students interested in becoming a dental hygienist should take courses in biology, chemistry, and mathematics. Also, some dental hygiene programs require applicants to have completed at least one year of college. Specific entrance requirements vary from one school to another.

In 2015, there were 326 dental hygiene programs accredited by the Commission on Dental Accreditation.[4] Most dental hygiene programs grant an associate's degree, although some also offer a certificate, a bachelor's degree, or a master's degree. A minimum of an associate's degree or a certificate in dental hygiene is generally required for practice in a private dental office. A bachelor's or master's degree usually is required for research, teaching, or clinical practice in public or school health programs.

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.

Licensure

Dental hygienists must be licensed by the state in which they practice. Nearly all states require candidates to graduate from an accredited dental hygiene school and pass both a written and clinical examination. The American Dental Association's Joint Commission on National Dental Examinations administers the written examination, which is 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 the legal aspects of dental hygiene practice. Alabama is the only state that allows licensure candidates to take its examinations if they have been trained through a state-regulated, on-the-job program in a dentist's office.

Other Qualifications

Dental hygienists should work well with others because they work closely with dentists and dental assistants as well as deal directly with patients. Hygienists also need good manual dexterity, because they use dental instruments within a patient's mouth, with little room for error.

Advancement

Advancement opportunities usually come from working outside a typical dentist's office, and usually require a bachelor's or master's degree in dental hygiene. Some dental hygienists may choose to pursue a career teaching in a dental hygiene program, working in public health, or working in a corporate setting.

Employment Trends

Dental hygienist ranks among the fastest-growing occupations, and job prospects are expected to be favorable in most areas; competition for jobs is likely in some areas.

Employment Change

Employment of dental hygienists is expected to grow 19% through 2024, which is much faster than the average for all occupations. This projected growth ranks dental hygienist among the fastest-growing occupations, in response to increasing demand for dental care and the greater use of hygienists.

TABLE 12.3 Projections Data for Dental Hygienists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Dental hygienists	200,500	237,900	37,400	19%

The demand for dental services will grow because of population growth, older people increasingly retaining more teeth, and a growing focus on preventive dental care. To meet this demand, facilities that provide dental care, particularly dentists' offices, will increasingly employ dental hygienists, and more hygienists per office, to perform services that have been performed by dentists in the past. Ongoing research indicating a link between oral health and general health also will spur the demand for preventive dental services, which are typically provided by dental hygienists.

Job Prospects

Job prospects are expected to be favorable in most areas, but will vary by geographical location. Because graduates are permitted to practice only in the state in which they are licensed, hygienists wishing to practice in areas that have an abundance of dental hygiene programs may experience strong competition for jobs. Older dentists, who have been less likely to employ dental hygienists, are leaving the occupation and will be replaced by recent graduates, who are more likely to employ one or more hygienists. In addition, as dentists' workloads increase, they are expected to hire more hygienists to perform preventive dental care, such as cleaning, so that they may devote their own time to more complex procedures. TABLE 12.3 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual wages of dental hygienists were $71,520 in May 2014. The middle 50% earned between $59,890 and $85,240. The lowest 10% earned less than $49,190, and the highest 10% earned more than $97,390.

Earnings vary by geographic location, employment setting, and years of experience. Dental hygienists may be paid on an hourly, daily, salary, or commission basis. Benefits vary substantially by practice setting and may be contingent upon full-time employment. A dental hygienist's benefits package may include health insurance coverage, membership dues for professional associations, paid vacation, sick leave, and tuition aid for continuing dental education.

Related Occupations

Other workers supporting health practitioners in an office setting include dental assistants, medical assistants, occupational therapist assistants and aides, physical therapist assistants and aides, physician assistants, and registered nurses. Dental hygienists sometimes work with radiation technology, as do radiation therapists.

Additional Information

For information on a career in dental hygiene, including educational requirements, contact:

- American Dental Hygienists Association (ADHA), 444 N. Michigan Ave., Suite 3400, Chicago, IL 60611. Internet: http://www.adha.org

For information about accredited programs and educational requirements, contact:

- Commission on Dental Accreditation, American Dental Association, 211 E. Chicago Ave., Chicago, IL 60611. Internet: http://www.ada.org/prof/ed/acred/commission/index.asp

The State Board of Dental Examiners in each state can supply information on licensing requirements.

DENTAL ASSISTANTS

Significant Points

- Job prospects should be excellent.
- Dentists are expected to hire more assistants to perform routine tasks so dentists may devote their time to more complex procedures.
- Many assistants learn their skills on the job, although an increasing number are trained in dental-assisting programs; most programs take one year or less to complete.
- More than one-third of dental assistants worked part time in 2012.

Work Description

Dental assistants perform a variety of patient care, office, and laboratory duties. They work alongside the dentists as they 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

FIGURE 12.3 Dental tools.
© Africa Studio/Shutterstock

sterilize and disinfect instruments and equipment, prepare tray setups for dental procedures, and instruct patients on postoperative and general oral health care. Examples of the types of tools used to assist dentists are seen in **FIGURE 12.3**.

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. Many states are expanding dental assistants' duties to include tasks such as coronal polishing and restorative dentistry functions for those assistants who meet specific training and experience requirements.

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-lit, 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.

Almost half of dental assistants had a 35- to 40-hour workweek in 2015. More than one-third worked part time, or fewer than 35 hours per week, and many others had variable schedules. Depending on the hours of the dental office where they work, assistants may have to work on Saturdays or evenings. Some dental assistants hold multiple jobs by working at dental offices that are open on different days or by scheduling their work at a second office around the hours they work at their primary office.

Employment Opportunities

Dental assistants held about 318,800 jobs in 2014. About 93% of all jobs for dental assistants were in dentists' offices. A small number of jobs were in the federal, state, and local governments or in offices of physicians. Some dental assistants worked part time, sometimes in more than one dental office.

Educational and Legal Requirements

Many assistants learn their skills on the job, although an increasing number are trained in dental-assisting programs offered by community and junior colleges, trade schools, technical institutes, or the armed forces. Most programs take one year to complete. For assistants to perform more advanced functions, or to have the ability to complete radiological procedures, many states require assistants to obtain a license or certification.

Education and Training

Some states have no formal education or training requirements to become an entry-level dental assistant. High school students interested in a career as a dental assistant should take courses in biology, chemistry, health, and office practices. For those wishing to pursue further education, the Commission on Dental Accreditation (CODA) approved 265 dental-assisting training programs in 2015.[5] 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 science or computer-related courses for admission. A number of private vocational schools offer four to six-month courses in dental assisting, but the Commission on Dental Accreditation does not accredit these programs.

A large number of dental assistants learn through on-the-job training. In these situations, the employing dentist or other dental assistants in the dental office teach the new

assistant dental terminology, the names of the instruments, how to perform daily duties, how to interact with patients, and other things necessary to help keep the dental office running smoothly. Although some things can be picked up easily, it may be a few months before new dental assistants are completely knowledgeable about their duties and comfortable doing all of their tasks without assistance.

A period of on-the-job training is often required even for those who have completed a dental-assisting program or have some previous experience. Different dentists may have their own styles of doing things that need to be learned before an assistant can be comfortable working with them. Office-specific information, such as where files are kept, will need to be learned at each new job. Also, as dental technology changes, dental assistants need to stay familiar with the tools and procedures that they will be using or helping dentists to use. On-the-job training is often sufficient to keep assistants up to date on these matters.

Licensure

Most states regulate the duties that dental assistants are allowed to perform. Some states require licensure or registration to perform expanded functions or to perform radiological procedures within a dentist's office. Licensure may include attending an accredited dental-assisting program and passing a written or practical examination. There are a variety of schools offering courses—approximately 10 to 12 months in length—that meet their state's requirements. Other states require dental assistants to complete state-approved continuing education courses of 4 to 12 hours in length. Some states offer the registration of other dental-assisting credentials with little or no education required. Some states require continuing education to maintain licensure or registration. A few states allow dental assistants to perform any function delegated to them by the dentist. Individual states have adopted different standards for dental assistants who perform certain advanced duties; in some states, for example, dental assistants who perform radiological procedures must complete additional training. Completion of the Radiation Health and Safety examination offered by Dental Assisting National Board (DANB) meets the standards in more than 30 states. Some states require the completion of a state-approved course in radiology as well. Twelve states have no formal requirements to perform radiological procedures.

Certification and Other Qualifications

Certification is available through the DANB and is recognized or required in 37 states. Certification is an acknowledgment of an assistant's qualifications and professional competence and may be an asset when one is seeking employment. Candidates may qualify to take the DANB certification examination by graduating from an ADA-accredited dental assisting education program or by having two years of full-time, or four years of part-time, experience as a dental assistant. In addition, applicants must have current certification in cardiopulmonary resuscitation. For annual recertification, individuals must earn continuing education credits. Other organizations offer registration, most often at the state level. Dental assistants must be a second pair of hands for a dentist; therefore, dentists look for people who are reliable, work well with others, and have good manual dexterity.

Advancement

Without further education, advancement opportunities are limited. Some dental assistants become office managers, dental-assisting instructors, dental product sales representatives, or insurance claims processors for dental insurance companies. Others go back to school to become dental hygienists. 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. Assistants wishing to take on expanded functions or perform radiological procedures may choose to complete coursework in those functions allowed under state regulation or, if required, obtain a state-issued license.

Employment Trends

Employment is expected to increase much faster than average; job prospects are expected to be excellent.

Employment Change

Employment is expected to grow 18% from 2014 to 2024, which is much faster than the average for all occupations.

Population growth, greater retention of natural teeth by middle-aged and older people, and an increased focus on preventive dental care for younger generations will fuel demand for dental services. Federal health legislation has expanded the number of individuals with access to health insurance and those with new or expanded dental insurance coverage are expected to visit a dentist more than they have in the past. Older dentists, who have been less likely to employ assistants or have employed fewer, are leaving the occupation and will be replaced by recent graduates, who are more likely to use one or more assistants. In addition, as dentists' workloads increase, they are expected to hire more assistants to perform routine tasks, so that they may devote their time to more complex procedures.

Job Prospects

Job prospects for dental assistants should be excellent, as dentists continue to need the aid of qualified dental assistants. There will be many opportunities for entry-level positions, which may offer on-the-job training, but some dentists prefer to hire experienced assistants, those who have completed a dental-assisting program, or those who have met state requirements to take on expanded functions within the office. In addition to job openings due to employment growth, numerous job openings will arise out of the need to replace

TABLE 12.4 Projections Data for Dental Assistants, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Dental assistants	318,800	377,400	58,600	18%

assistants who transfer to other occupations, retire, or leave for other reasons. TABLE 12.4 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual wages of dental assistants were $35,390 in May 2014. The middle 50% earned between $29,260 and $42,810. The lowest 10% earned less than $24,580, and the highest 10% earned more than $49,540.

Benefits vary substantially by practice setting and may be contingent upon full-time employment. According to a 2014 survey by the Dental Assisting National Board, 75% of certified dental assistants (CDAs) reported receiving paid vacation from their employers, and more than half of CDAs received health benefits.

Related Occupations

Other workers supporting health practitioners include dental hygienists, medical assistants, surgical technologists, pharmacy aides, pharmacy technicians, occupational therapist assistants and aides, and physical therapist assistants and aides.

Additional Information

Information about career opportunities and accredited dental assistant programs is available from:

- Commission on Dental Accreditation, American Dental Association, 211 East Chicago Ave., Suite 1900, Chicago, IL 60611. Internet: http://www.ada.org/prof/ed/accred/commission/index.asp

For information on becoming a certified dental assistant and a list of state boards of dentistry, contact:

- Dental Assisting National Board, Inc., 444 N. Michigan Ave., Suite 900, Chicago, IL 60611. Internet: http://www.danb.org

For more information on a career as a dental assistant and general information about continuing education, contact:

- American Dental Assistants Association, 35 East Wacker Dr., Suite 1730, Chicago, IL 60601. Internet: http://www.dentalassistant.org

DENTAL LABORATORY TECHNICIANS

Significant Points

- Most technicians learn their craft on the job, but many employers prefer to hire those with formal training.
- Slower-than-average employment growth is expected for dental laboratory technicians.
- Job opportunities should be favorable because few people seek these positions.

Work Description

Dental laboratory technicians fill prescriptions from dentists for crowns, bridges, dentures, and other dental prosthetics. First, dentists send a specification of the item to be manufactured, along with an impression or mold of the patient's mouth or teeth. With new technology, a technician may receive a digital impression rather than a physical mold. Then dental laboratory technicians, also called dental technicians, create a model of the patient's mouth by pouring plaster into the impression and allowing it to set. They place the model on an apparatus that mimics the bite and movement of the patient's jaw. The model serves as the basis of the prosthetic device. Technicians examine the model, noting the size and shape of the adjacent teeth, as well as gaps within the gum line. Based on these observations and the dentist's specifications, technicians build and shape a wax model of the tooth or teeth, using small hand instruments called wax spatulas and wax carvers. The wax model is used to cast the metal framework for the prosthetic device.

After the wax tooth has been formed, dental technicians pour the cast and form the metal and, using small handheld tools, prepare the surface to allow the metal and porcelain to bond. They then apply porcelain in layers, to arrive at the precise shape and color of a tooth. Technicians place the tooth in a porcelain furnace to bake the porcelain onto the metal framework, and then adjust the shape and color, with subsequent grinding and addition of porcelain to achieve a sealed finish. The final product is a nearly exact replica of the lost tooth or teeth.

In some dental laboratories, technicians perform all stages of the work, whereas in other labs, each technician works on only a few. Dental laboratory technicians can specialize in one of five areas: orthodontic appliances,

FIGURE 12.4 Dental lab technician working with an articulator device.
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crowns and bridges, complete dentures, partial dentures, or ceramics. Job titles can reflect specialization in these areas. For example, technicians who make porcelain and acrylic restorations are called **dental ceramists**.

In small laboratories, technicians usually handle every phase of the operation. In large ones, in which virtually every phase of the operation is automated, technicians may be responsible for operating computerized equipment. Technicians also inspect the final product for quality and accuracy. An example of a dental laboratory technician working with an articulator device is seen in FIGURE 12.4.

Work Environment

Dental laboratory technicians generally work in clean, well-lit, and well-ventilated laboratories. They have limited contact with the public. Salaried laboratory technicians usually work 40 hours a week, but some work part time. At times, technicians wear goggles to protect their eyes, gloves to handle hot objects, or masks to avoid inhaling dust. They may spend a great deal of time standing. Dental technicians should be particularly careful when working with tools because there is a risk of injury.

Dental technicians usually have their own workbenches, which can be equipped with Bunsen burners, grinding and polishing equipment, and hand instruments, such as wax spatulas and wax carvers. Some dental technicians have computer-aided milling equipment to assist them with creating artificial teeth.

Employment Opportu nities

Dental laboratory technicians held about 38,700 jobs in 2014. Many of the salaried jobs were in medical equipment and supply manufacturing laboratories, which usually are small, privately owned businesses with fewer than five employees. However, some laboratories are large; a few employ more than 1,000 workers. In addition to manufacturing laboratories, many dental laboratory technicians worked in offices of dentists. Some dental laboratory technicians open their own offices.

Educational and Legal Requirements

Most dental laboratory technicians learn their craft on the job; many employers, however, prefer to hire those with formal training or at least a high school diploma.

Education and Training

High school students interested in becoming dental laboratory technicians should take mathematics, metal and wood shop, and drafting. Dental laboratory technicians usually begin as helpers and gradually learn new skills as they gain experience.

Dental laboratory technicians begin by learning simple tasks, such as pouring plaster into an impression, and progress to more complex procedures, such as making porcelain crowns and bridges. Becoming a fully trained technician requires an average of three to four years, depending on the individual's aptitude and ambition, but it may take a few years more to become an accomplished technician. High school students interested in becoming dental laboratory technicians should take courses in art, metal and wood shop, drafting, and sciences. Courses in management and business may help those wishing to operate their own laboratories.

Training in dental laboratory technology also is available through universities, community and junior colleges, vocational-technical institutes, and the armed forces. Formal training programs vary greatly both in length and in the level of skill they impart. In 2015, the Commission on Dental Accreditation, in conjunction with the American Dental Association, accredited 24 programs in dental laboratory technology.[6] These programs provide classroom instruction in materials science, oral anatomy, fabrication procedures, ethics, and related subjects. In addition, each student is given supervised practical experience in a school or an associated dental laboratory. Accredited programs normally take two years to complete and lead to an associate's degree. A few programs take about four years to complete and offer a bachelor's degree in dental technology. Graduates of two-year training programs need additional hands-on experience to become fully qualified.

Each dental laboratory owner operates in a different way, and classroom instruction does not necessarily expose students to techniques and procedures favored by individual laboratory owners. Students who have taken enough courses to learn the basics of the craft usually are considered good candidates for training, regardless of whether they have completed a formal program. However, many employers will train someone without any classroom experience.

General information on grants and scholarships is available from individual schools. State employment service offices can provide information about job openings for dental laboratory technicians.

Other Qualifications

Dental technicians need a high degree of manual dexterity, good vision, and the ability to recognize very fine color

TABLE 12.5 Projections Data for Dental Laboratory Technicians 2014–2024

Occupational Title	Employment, 2014	Project Employment, 2024	Change, 2014–2024	
			Number	Percentage
Dental laboratory technicians	38,700	42,900	4,200	11%

shadings and variations in shape. An artistic aptitude for detailed and precise work also is important.

Certification and Advancement

In large dental laboratories, dental technicians may become supervisors or managers. Experienced technicians may teach or take jobs with dental suppliers in such areas as product development, marketing, and sales. Opening one's own laboratory is another, and more common, way to advance and earn more.

The National Board for Certification in Dental Laboratory Technology, an independent board established by the National Association of Dental Laboratories, offers certification in dental laboratory technology. Certification, which is voluntary except in three states, can be obtained in five specialty areas: crowns and bridges, ceramics, partial dentures, complete dentures, and orthodontic appliances. Certification may increase chances of advancement.

Employment Trends

Overall, closer-to-average growth is expected for employment of dental laboratory technicians, but varies by detailed occupation. Job opportunities should be favorable because few people seek these positions.

Employment Change

Employment of dental laboratory technicians is expected to grow 11%, which is close to the average for all occupations. During the last few years, demand has arisen from an aging public that is growing increasingly interested in cosmetic prostheses. For example, many dental laboratories are filling orders for composite fillings that are the same shade of white as natural teeth to replace older, less attractive fillings. However, job growth for dental laboratory technicians will be limited. The overall dental health of the population has improved because of the fluoridation of drinking water and greater emphasis on preventive dental care, which has reduced the incidence of dental cavities. As a result, full dentures will be less common, as most people will need only a bridge or crown.

Job Prospects

Job opportunities for dental laboratory technicians should be favorable. Those with formal training in a dental laboratory technology program will have the best job prospects. In addition to openings from job growth, many job openings also will arise from the need to replace technicians who transfer to other occupations or who leave the labor force. TABLE 12.5 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual earnings of wage and salary dental laboratory technicians were $40,140 in May 2014. The middle 50% earned between $28,340 and $48,630. The lowest 10% earned less than $22,120, and the highest 10% earned more than $61,390. In the two industries that employed the most dental laboratory technicians—medical equipment and supplies manufacturing and offices of dentists—median annual earnings were $39,590 and $40,960 respectively.

Related Occupations

Dental laboratory technicians manufacture and work with the same devices that are used by dispensing opticians, orthotists, prosthetists, and medical and ophthalmic laboratory technicians. Other occupations that work with or manufacture goods using similar tools and skills are precision instrument and equipment repair, and textile, apparel, and furnishings occupations.

Additional Information

For a list of accredited programs in dental laboratory technology, contact:

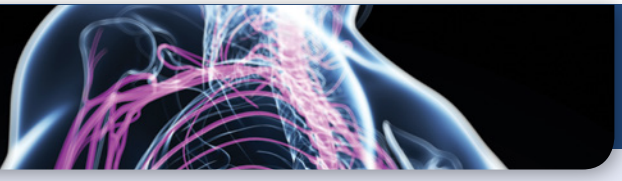
- Commission on Dental Accreditation, American Dental Association, 211 E. Chicago Ave., Chicago, IL 60611. Internet: http://www.ada.org

For information on requirements for the certification of dental laboratory technicians, contact

- National Board for Certification in Dental Technology, 325 John Knox Rd., L103, Tallahassee, FL 32303. Internet: http://www.nbccert.org

For information on career opportunities in commercial dental laboratories, contact:

- National Association of Dental Laboratories, 325 John Knox Rd., L103, Tallahassee, FL 32303. Internet: http://www.nadl.org



LEARNING PORTFOLIO

Issues for Discussion

1. Which of the jobs discussed in this chapter would you be most likely to recommend to a friend or acquaintance interested in working in the healthcare field? Explain your selection and rationale.
2. Choose one of the professions discussed in this chapter. Discuss the most important personal attribute this profession should have. Why do you feel this is so important?

Enrichment Activities

1. Many in the dental community believe a connection exists between a person's diet and tooth decay and other mouth disorders. Search the Internet for information about this connection and create a presentation about your findings.
2. Visit the following website to learn about toothbrush mistakes and how to fix them: http://www.webmd.com/oral-health/healthy-teeth-14/brushing-teeth-mistakes. Name any of the identified mistakes that surprised you.
3. Develop a chart to compare and contrast the following factors among the professions discussed in this chapter: educational requirements, employment trends, opportunities for advancement, salary potential, and possible career ladders.
4. Use the Internet to research your state's requirements for any of the professions discussed in this chapter. List these requirements, if they exist. Compare and contrast licensing, certification, and registration for this career with any other career you have examined in this course.
5. View the following videos: *Something to Smile About* (Dentist) at http://www.ada.org/en/education-careers/careers-in-dentistry/be-a-dentist and *Something To Smile About* (Dental Hygienist) at http://www.ada.org/en/education-careers/careers-in-dentistry/dental-team-careers/dental-hygienist. Discuss the roles of a dentist and a dental hygienist with your instructor and classmates.

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2. American Dental Association. *Dental Admission Test (DAT)*. Internet: http://www.ada.org/en/education-careers/dental-admission-test
3. American Dental Association. *Something to Smile About Careers in Dentistry*. Internet: http://www.ada.org/~/media/ADA/Education%20and%20Careers/Files/minority_dentist_brochure.pdf?la=en
4. Commission on Dental Accreditation. *Dental Hygiene Programs*. Internet: http://www.ada.org/en/coda/find-a-program/search-dental-programs#t=us&sort=relevancy&f:ProgramName=[Dental%20Hygiene]
5. Commission on Dental Accreditation. *Dental Assistant Programs*. Internet: http://www.ada.org/en/coda/find-a-program/search-dental-programs#t=us&sort=relevancy&f:ProgramName=[Dental%20Assisting]
6. Commission on Dental Education. *Dental Laboratory Technician Programs*. Internet: http://www.ada.org/en/coda/find-a-program/search-dental-programs#t=us&sort=relevancy&f:ProgramName=[Dental%20Laboratory%20Technology]

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CHAPTER 13

Dietetics*

Key Terms

Academy of Nutrition and Dietetics (AND)
Accreditation Council for Education in Nutrition and Dietetics (ACEND)
Business dietitian nutritionists
Certified diabetes educator®(CDE®)
Certified nutrition specialist®(CNS®)
Certified nutrition specialist-scholar℠(CNS-S℠).
Certified nutrition support clinician® (CNSC®)
Clinical dietitian nutritionists
Commission on Dietetic Registration (CDR)
Community dietitian nutritionists
Consultant dietitian nutritionists
Coordinated Program in Dietetics (CP)
Didactic Program in Dietetics (DPD)
Dietary Managers Association
Dietetic assistant (DA)
Dietetic educator
Dietetic internship (DI)
Dietetic technician, registered (DTR)
Individualized Supervised Practice Pathways (ISPPs)
Management dietitian nutritionists
Medical nutrition specialty
Registered dietitian nutritionist (RDN)
Research dietitian nutritionists
School nutrition specialist (SNS)
Specialty board certification

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

DIETITIANS AND NUTRITIONISTS

Significant Points

- Most jobs are in hospitals, outpatient and ambulatory care centers, including offices of physicians and other healthcare professionals, and in long-term care, including nursing care and assisted-living facilities.
- Dietitians and nutritionists need at least a bachelor's degree; licensure, certification, or registration requirements vary by state. Nearly half of dietitians and nutritionists hold a master's degree.
- Most dietitians who become certified through the Academy of Nutrition and Dietetics use the title registered dietitian nutritionist (RDN). New graduates will need a master's degree to be eligible for registration beginning January 1, 2024.
- Applicants with specialized training, an advanced degree, or certifications beyond the particular state's minimum requirement should enjoy the best job opportunities.

Work Description

Registered dietitian nutritionists (RDNs) are experts in food and nutrition. They advise people on what to eat in order to lead a healthy lifestyle or achieve a specific health-related goal. They counsel individuals and groups; supervise food-service systems for institutions such as schools, hospitals, and prisons; promote sound eating habits through education; and conduct research. Some RDNs are self employed, working as consultants to facilities such as hospitals and nursing care facilities, food- and nutrition-related businesses, or have a private practice providing medical nutrition therapy for individuals. Federal government jobs are with U.S. Department of Veteran Affairs (VA) hospitals and with the U.S. Department of Defense in different branches of the armed services. RDNs also work in the U.S. Department of Agriculture and the National Cancer Institute, either in research or program planning and evaluation. Some work as consultants to facilities such as hospitals and nursing care facilities or food- and nutrition-related businesses. Some RDNs are employed in special food services, an industry made up of firms providing food services on contract to facilities such as school lunch programs, colleges and universities, airlines, correctional facilities, and company cafeterias.

Although many RDNs do similar tasks, there are several specialties in the occupation. Major areas of specialization include clinical, management, community, business and industry, and consultant dietetics. RDNs also work in academia as educators and researchers.

Clinical dietitian nutritionists provide nutrition services for patients in hospitals, long-term care facilities, outpatient clinics, or in the offices of physicians and other healthcare practitioners. They assess the patient's nutritional needs based on their medical condition, develop and implement nutrition care plans, and evaluate and document the results. Clinical dietitians confer with doctors and nurses to coordinate the nutritional and medical needs of patients.

Expanding knowledge in medical science has led to practice specialties in dietetics. Increasingly, clinical dietitians specialize in such areas as geriatrics, pediatrics, oncology, care of the critically ill, renal care, and diabetes care. Those who care for critically ill patients select or recommend formulas for patients who require tube or intravenous feedings. RDNs who specialize in renal dietetics evaluate and counsel patients with kidney disease who are on chronic dialysis; those who specialize in diabetes assist patients in managing diet, physical activity, and insulin or other medications to keep blood sugar at optimum levels (**FIGURE 13.1**).

Pediatric RDNs specialize in the nutritional care of infants, children, and adolescents during hospitalization and in outpatient clinics for follow-up, especially for children with developmental disabilities or chronic diseases such as cystic fibrosis, diabetes, or celiac disease. Oncology dietitians are challenged with helping patients find foods concentrated in protein and calories that they find palatable with the changes in appetite and altered taste that sometimes accompany chemotherapy. Geriatric specialists work in long-term care facilities and other programs for the elderly at the local, state, or national level.

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 RDN may also manage the foodservice department.

Consultant dietitian nutritionists work under contract with healthcare facilities or in their own private practices. Consulting has become a significant specialty in dietetics. It has appeal for RDNs who need flexible work time and have a desire to be autonomous. Consultant dietitians work under contract with healthcare facilities or in their own private

FIGURE 13.1 A clinical dietitian helps a client with diabetes select recipes for meal planning to manage blood glucose.

© Lilyana Vynogradova/Shutterstock

practice. Some work for wellness programs, sports teams, supermarkets, and other nutrition-related businesses. They may consult with foodservice managers to provide expertise in food sanitation and safety, menu development, and budgeting. They advise food and pharmaceutical industries; speak at professional seminars; author food and nutrition books; counsel patients for a group practice of physicians; plan food service systems; and tailor nutrition regimens within fitness programs for athletes, dancers, and others.

Community dietitian nutritionists counsel individuals and groups on sound nutrition practices to prevent disease and to promote good health. Community RDNs may be employed by a city or county health department or federal health clinics. Many RDNs work for Women, Infants, and Children (WIC), a government-funded supplemental nutrition program; eligibility is based on income and nutritional risk. WIC dietitians and nutritionists do nutrition screening and counseling of women during pregnancy and mothers of infants and young children at nutritional risk (FIGURE 13.2).

They also conduct nutrition education classes, including breastfeeding support. Their job is to evaluate individual nutritional needs, establish care plans, and communicate the principles of good nutrition in a way that individuals and their families can understand.

RDNs are employed by home health and hospice agencies and by human service agencies that provide group and home-delivered meals through government-supported elderly nutrition programs at senior centers. Many community RDNs work for local or regional food banks to monitor food sanitation and safety and to provide nutrition education for clients. They coordinate nutrition awareness and disease prevention programs in settings such as farmers' markets, public health agencies, child day care centers, and health clubs. They may also collaborate with nurses and health educators in conducting information sessions on such subjects as alcoholism, smoking, or hypertension.

Community RDNs counsel clients on food selection in relation to culture and lifestyle. Potential clients might be, for example, a truck driver who has diabetes and limited access to healthy food, or an elderly woman with heart failure who is on a low-sodium diet but who eats mostly high-sodium canned and frozen foods because she doesn't have the energy to cook.

FIGURE 13.2 Community RDNs monitor weight as part of nutrition screening in a WIC program.

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In addition to evaluating clients, RDNs working in a home health setting may provide informal instruction on nutrition, menu planning, grocery shopping, food safety and sanitation, or preparation of special infant formulas. In ambulatory settings, dietitians provide **medical nutrition therapy** for clients with a variety of medical conditions, including obesity, diabetes, and cardiovascular disease, and for parents of infants or children with special dietary needs because of metabolic disorders or other chronic disease.

Practice opportunities for clinical and community RDNs are becoming more diverse because of 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 food manufacturing, advertising, and marketing. Those who work for food manufacturers or grocery store chains may analyze the nutritional content of foods for labeling or marketing. Those working for grocery stores often conduct tours for groups with special dietary needs—for example, those with celiac disease who must avoid gluten—to assist in label reading and choosing gluten-free foods. They may also prepare literature for distribution to customers, students, or other interested parties. Those employed by magazines may determine the nutrient 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.

Business dietitian nutritionists work as a professional resource for corporations in product development, food styling, menu design, and nutrient analysis. As businesses become more aware of the public's desire for accurate nutrition information, they are eager to hire RDN experts. Other roles for the business RDN are the sales professional or purchasing agent representing food, equipment, or nutrition product accounts; or as a food, nutrition, or marketing expert in public relations and the media. The new requirement for posting calories for menu items at restaurant chains and fast-food restaurants has expanded opportunities for business dietitians.

Management dietitian nutritionists are responsible for large-scale food services in a variety of settings: hospitals, long-term care, company cafeterias, prisons, elementary and secondary schools, and colleges and universities. They supervise the planning, preparation, and service of meals; select, train, and direct foodservice supervisors and workers; budget for and purchase food, equipment, and supplies; enforce sanitary and safety regulations; and prepare records and reports. Increasingly, RDNs use computer programs to plan meals that satisfy nutrition requirements and are economical at the same time. Directors also decide on departmental policy, coordinate dietetic services with the

activities of other departments, and are responsible for the dietetics department budget, which in large organizations may amount to millions of dollars annually. Directors are responsible for all employees and functions in the department, including hiring and evaluating employees and quality control, and, depending on the size of the department, may delegate some of these responsibilities to assistant directors or supervisors.

Research dietitian nutritionists (RDNs) usually are employed in academic medical centers or universities and federal nutrition programs 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 RDNs may examine changes in the way the body uses food and nutrients over the course of a lifetime, for example, or the interaction of medications and diet. They may investigate the nutritional needs of persons with particular diseases, behavior modification for those on a weight loss program, or applied topics such as foodservice systems and equipment. Often research RDNs collaborate with life scientists, physicians, nurses, biomedical engineers, and researchers from other disciplines.

As a **dietetic educator**, the RDN teaches the science of nutrition and foodservice systems management in colleges, universities, and hospitals. RDNs have always recognized the need to teach, whether in clinical practice, community settings, or for corporations, and some are specifically interested in pursuing careers as educators. In academia, the RDN conducts nutrition and foodservice systems research and writes articles and books on nutrition and foodservice systems. Many educators in the field are directors of dietetic internships. RDNs in education usually hold advanced degrees and have considerable experience.

Work Environment

Most RDNs work 40 hours per week. About 23% worked part time in 2013.[1] Those employed in hospitals sometimes work on weekends, while those in commercial food services tend to have irregular hours. Clinical RDNs working in ambulatory settings and in private practice may work evenings and weekends to accommodate working hours of their clients and for community programs such as health fairs. Those involved in consulting spend a significant amount of time traveling. Consulting RDNs and those in private practice may need to spend time on marketing and other business-related tasks, such as scheduling appointments and preparing informational materials for clients.

Employment Opportunities

RDNs held about 66,700 jobs in 2014. According to a 2013 survey in 2013 by the **Academy of Nutrition and Dietetics (AND)**, more than half of all jobs were in three settings—hospitals, outpatient care centers or offices of physicians and other health practitioners, and long-term care facilities including assisted care facilities. Others worked in community programs such as public health or Women, Infants, and Children (WIC), food and nutrition management positions, education and research, or as a consultant. The majority worked in non profit (38%) and for-profit (30%) settings; about 20% worked for the government and 7% were self employed (TABLE 13.1).[1]

TABLE 13.1 Practice Areas of Dietitians and Nutritionists, 2013

Clinical nutrition, hospital inpatient	32%
Clinical nutrition, ambulatory care/outpatient	17%
Clinical nutrition, long-term care facilities	8%
Community	11%
Food and nutrition management	12%
Consultation and business	8%
Education and research	6%

Modified from: Rogers D. Compensation and Benefits Survey 2013: Education and Job Responsibility Key to Increased Compensation. *J Acad Nutr Diet*. 2014;114(1):17–33.[1]

Experienced RDNs may advance to assistant, associate, or director of a clinical nutrition department or food and nutrition services in a hospital or in long-term care. Some RDNs specialize in areas such as renal, diabetes, or pediatric dietetics. Others 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 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 RDNs include kidney disease, diabetes, oncology, pediatrics, gerontology, and advanced clinical practice.

Educational and Legal Requirements

RDNs need at least a bachelor's degree. Licensure, certification, or registration requirements vary by state.

Education and Training

Becoming a RDN requires at least a bachelor's degree in dietetics, foods and nutrition, foodservice systems management, or a related area plus supervised clinical experience.

Professional Profiles

Name: Eecole, MS, RDN, LD
Title: Dietitian Nutritionist—Sustainable Food Programs Coordinator
Education: MS in Nutrition, BS Biology

Q: Describe your job and organization.

A: I am the sustainable food programs coordinator at a large academic hospital in an urban setting. My work is seasonal. During the spring and summer, I manage a farmers' market for the hospital—our consumers are from the hospital and the wider community.

Q: Describe a typical work day.

A: Managing the farmers' market in the spring and summer involves marketing, finding and enrolling vendors, cost accounting, and overall task management. In the hospital, I am responsible for the food prescriptions pharmacy and recommend foods based on health components. In the food and nutrition department that prepares healthy meals, I work with the executive chef and the food buyer to ensure that all categories of food—meat, dairy products, fruits and vegetables—are grown sustainably. The department uses a closed-loop system by composting all food waste to generate energy for the hospital.

Q: Why did you choose this profession?

A: I am passionate and believe in the philosophy that food is medicine and that healthy food is produced without antibiotics for animals, and without pesticides for fruits, vegetables, and grains. I work with both food and people, and I'm able to change systems. I conduct sustainability training for staff and teach how sustainability relates to their job.

Q: What challenges you most about this profession?

A: There is much hidden information behind the scenes in food production, both misinformation and contradictory information. My job is to shed light on misguided and hidden information. People are resistant to change—and the current industrial food system provides relatively inexpensive processed food because of heavy government subsidies for corn and soy products. Unsubsidized fresh fruits and vegetables are more expensive, so it's a hard sell to get the public to buy the more expensive foods.

Q: Name and explain what part of your academic training most prepared you for this profession

A: A master's degree in nutrition—especially environmental policy and nutrition education. Of course, basic nutrition is important. I had a lot of life experience around waste management and environmentalism. My current position requires a master's degree. Other paths to the field of sustainability are certification programs or a degree in engineering or sustainability.

Q: What do you wish you had known in high school or college about pursuing this career?

A: That this career existed! My first degree was in biology.

Q: What advice would you give someone who is considering this career?

A: You can't be afraid to get your hands dirty or face a lot of resistance. It helps to be passionate and know that you will often need to lead the way, since this is a very new territory for most. Sustainability is a new field—about 10 years young!

Q: What personal characteristics are needed for this work?

A: Personal characteristics needed for my position are courage, persistence, curiosity, open-mindedness, and passion. Excellent communication skills are also necessary.

Q: What websites do you recommend as resources?

A: The Hunger and Environmental Nutrition Practice Group within the Academy of Nutrition and Dietetics [Internet: http://www.hendpg.org/], Health Care Without Harm [Internet: https://noharm.org/], and Practice Green Health [Internet: https://practicegreenhealth.org/]. Two films that provide background on the industrial food system are Food, Inc. and Forks over Knifes.

College students in these majors take courses in foods, nutrition, institution management, chemistry, biochemistry, biology, microbiology, and physiology. Other suggested courses include business, statistics, computer science, psychology, sociology, and economics. High school students interested in becoming a RDN should take courses in biology, chemistry, mathematics, health, and communications.

The **Accreditation Council for Education in Nutrition and Dietetics (ACEND)** of the AND is the body that accredits programs in dietetics education, including the **Didactic Program in Dietetics (DPD)**, **Coordinated Program in Dietetics (CPD)**, and **dietetic internship (DI)**[2].

To complete requirements for the **Commission on Dietetic Registration (CDR)** registration examination required for licensure or certification, graduates must have completed supervised clinical training. Clinical training is incorporated into CPD or is obtained through a DI. Application for a dietetic internship requires graduation from a DPD.[2]

As of 2015, there were 57 accredited CPDs. Some are bachelor's programs and others are master's programs; the area of emphasis varies from clinical to food systems management. The number of positions available varies with each program and requires application at least one year before starting the program.[2]

For students applying for a DI, students must have graduated from a DPD. In 2015, there were 223 DPDs in the United States. Competition is keen for internships and graduation from a DPD program does not guarantee obtaining an internship. There are 246 accredited DIs. These internships may be full-time programs lasting 6 to 12 months or part-time programs lasting two years. DIs are offered by a variety of colleges and universities, hospitals, WIC programs, and other agencies. The emphasis of each internship varies. Some examples are community nutrition, school nutrition, medical nutrition therapy, health promotion and disease prevention, and food systems management and child nutrition programs. Some programs offer a graduate degree and require admission to graduate school as well as admission to the internship program. Application for DIs is completed online and can be submitted in April and November. Students interested in exploring internship options can view available internships online.[2] Applicants to DIs are computer matched to one internship program.[3] For more information on internships, go to *Additional Information* at the end of this chapter.

Because of the competition for DIs by graduates of DPD programs, in 2011 the AND developed **Individualized Supervised Practice Pathways (ISPPs)**—referred to as "ispeys"—to allow ACEND-accredited dietetics programs to add supervised practice into the degree program to meet the 1,200 hours of supervised clinical experience required to be able to sit for the registration exam. Students unable to match for a DI after obtaining a bachelor's degree through a DPD program would be able to obtain the needed clinical experience.[4]

Beginning in 2012, ACEND conducted meetings to obtain recommendations for the future educational needs of dietetic practitioners. Individuals representing employers, practitioners, educators, administrators, professionals working with nutrition and dietetic professionals, and students met with ACEND staff members to provide input. Based on this input and the expected roles of future dietetics professionals, ACEND made these recommendations for educational requirements: (1) master's degree preparation for entry-level generalist dietitian nutritionists, (2) bachelor's degree preparation for entry-level nutrition and dietetics technicians, and (3) an associate's degree for nutrition health workers—a new category. ACEND will develop new standards for each of the three degree programs. Dietetic education programs will be given the opportunity to voluntarily adopt these new degree-based standards.[5]

However, the CDR will require a master's degree for new graduates to be eligible for registration (RDN) as of January 1, 2024.[6] Also, because of ACEND recommendations, many dietetic programs are in the process of changing the curriculum and the requirements for students applying for programs. A change in the educational requirements for dietitians and nutritionists is in line with other allied health professions, which require a master's degree at entry level for occupational therapy, clinical social work, and speech-language pathology, and doctoral level training for physical therapy and audiology.

Licensure

Of the 52 states and jurisdictions with laws governing dietetics, 36 require licensure, 7 require statutory certification, and 3 require title protection. Requirements vary by state.[7] As a result, interested candidates should determine the requirements of the state in which they want to work before sitting for any exam.

In states that require licensure, only people who are licensed can work as RDNs. States that require statutory certification limit the use of occupational titles to people who meet certain requirements; individuals without certification can still practice as a dietitian or nutritionist, but without using certain titles. Registration is the least-restrictive form of state regulation of dietitians and nutritionists. In some states, those who are not registered are allowed to practice as RDNs.

Certification and Other Qualifications

Although not required, the CDR of AND awards the registered dietitian (RD) or registered dietitian nutritionist (RDN) credential to those who pass an exam after completing academic coursework and a supervised internship. This certification is different from the statutory certification regulated by some states and is discussed in the previous section. To maintain a RDN status, at least 75 credit hours of CDR-approved continuing education must be obtained every five years.

Another route to certification (other than the AND) is through the Board for Certification of Nutrition Specialists

(BCNS) as a **certified nutrition specialist® (CNS®)** and the **certified nutrition specialist-scholar℠ (CNS-S℠)**. Eligibility requirements for the CNS® are a graduate degree, supervised clinical experience, and successfully completing a certification examination.[8]

Advancement

Experienced RDNs may advance to management positions, such as assistant director, associate director, or director of a dietetic department, or may become self employed. Some become sales representatives for equipment, pharmaceutical, or food manufacturers. A master's degree can help some workers to advance their careers, particularly in career paths related to research, advanced clinical positions, or public health.

Clinical RDNs that become board certified in one of the six specialists demand higher salaries.[1] The CDR offers **specialty board certification** in gerontological nutrition (GSG), Oncology Nutrition (CSO), Pediatric Nutrition (CSP), renal nutrition (CSR), sports nutrition (CSSN), and advanced practice in clinical nutrition (AP-RDN) (FIGURE 13.3).

Eligibility requirements to become board certified include a specified number of practice hours in the specialty area and successfully completing a certifying exam.[9] RDNs can also become either a **certified diabetes educator®(CDE®)** conferred by the National Certification Board for Diabetes Educators (NCBDE)[10] or a **certified nutrition support clinician® (CNSC®)** conferred by the American Society for Parenteral and Enteral Nutrition (ASPEN).[11]

Employment Trends

Above-average employment growth is projected. Good job opportunities are expected, especially for RDNs with specialized training, an advanced degree, or certifications beyond the particular state's minimum requirement.

FIGURE 13.3 RDNs can obtain specialty board certification in gerontological nutrition (CSG).

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Employment Change

Employment of RDNs is expected to increase 16% during the 2014–2024 projection decade, faster than average for all occupations but slower than some other health professions. Job growth will result from an increasing emphasis on disease prevention because of the high incidence of obesity and diseases that accompany obesity—diabetes and cardiovascular disease. As the baby-boom generation grows older and seek ways to stay healthy, there will be greater demand for dietetic services. The aging population will increase the need for RDNs in long-term care facilities and home health care. Public interest in nutrition and increased emphasis on health education and prudent lifestyles also will spur demand, especially in foodservice management.

Employment growth, however, may be constrained if some employers substitute other workers, such as health educators, foodservice managers, and dietetic technicians, to do work related to nutrition. Also, demand for medical nutritional therapy services is related to the ability of patients to pay, either out-of-pocket or through health insurance, and although more insurance plans now cover medical nutrition therapy services, the extent of such coverage varies among plans. Growth may be curbed by limitations on insurance reimbursement for dietetic services.

Hospitals will continue to employ a large number of RDNs to provide medical nutrition therapy and for managing the foodservice department. Hospitals also will continue, however, to contract with outside agencies for food service and move medical nutritional therapy to outpatient care facilities, slowing job growth related to food service in hospitals and outpatient facilities, and with other employers.

The number of positions in nursing care facilities is expected to decline, as these establishments continue to contract with outside agencies for food services. Another reason for the decline is the desire for elderly to receive care in their home. However, employment is expected to grow rapidly in contract providers of food services, in outpatient care centers, and in offices of physicians and other health practitioners and in home health.

Job Prospects

Overall, job opportunities for RDNs are expected to be favorable. RDNs who have earned advanced degrees or certification in a specialty area may enjoy better job prospects. In addition to employment growth, job openings will result from the need to replace experienced workers who retire or leave the occupation for other reasons.

RDNs with specialized training, an advanced degree, or certifications beyond the particular state's minimum requirement will experience the best job opportunities. Those specializing in renal and diabetes or gerontological nutrition will benefit from the increased incidence of diabetes and the aging of the population. TABLE 13.2 shows some projection data provided by the U.S. Department of Labor.

TABLE 13.2 Projections Data for Dietitians and Nutritionists, 2014–2024

Occupational Title	Employment 2014	Projected Employment 2024	Change 2014–2024	
			Number	Percentage
Dietitians and nutritionists	66,700	77,600	11,000	16%

Earnings

According to AND, the median annual wage for RDNs was $60,000 in 2013. The median annualized wages varied by practice area (TABLE 13.3). Those in food and nutrition management earned the highest salary ($74,000), and clinical dietitians working in the community earned the lowest salaries ($54,205). Clinical dietitians working in outpatient settings and in long-term care earned around $60,000.[1] Salaries also vary by years in practice, educational level, and geographic region.

Related Occupations

Workers in other occupations who have similar educational and job requirements are foodservice managers, health educators, dietetic technicians, and registered nurses.

DIETETIC TECHNICIANS

Significant Points

- Most jobs are in hospitals and long-term care including nursing care and assisted-living facilities and in foodservice management in these settings.

TABLE 13.3 Median Annual Wages in the Industries Employing the Largest Numbers of Dietitians and Nutritionists, 2013

Food and nutrition management	$74,000
Consultation and business	$65,603
Education and research	$65,000
Outpatient/ambulatory care	$60,008
Long-term care (nursing and assisted-living facilities)	$59,009
Inpatient (hospital)	$55,848
Community	$54,205

Data from: Rogers D. Compensation and Benefits Survey 2013: Education and Job Responsibility Key to Increased Compensation. *J Acad Nutr Diet*. 2014;114 (1):17–33.[1]

- The dietetic technician, registered needs at least an associate's degree; only the state of Maine requires licensure for the dietetic technician, registered.
- Applicants with experience in foodservice management will enjoy the best job opportunities.

Work Description

A **dietetic technician, registered (DTR)** works as a member of the foodservice management and healthcare team, independently or in consultation with a registered dietitian. The DTR works under the supervision of a RDN when conducting medical nutrition therapy as a part of nutrition care planning. In other settings, the DTR does not necessarily work under the supervision of the RDN.[12]

The DTR supervises support staff, monitors cost-control procedures, interprets and implements quality assurance procedures, and screens patients/clients for nutritional risk. A DTR 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 DTR obtains, evaluates, and uses diet histories to plan nutritional care for patients. Using this information, the technician guides families and individuals in selecting and preparing food and planning menus based on nutritional needs. In a clinical setting, the dietetic technician often monitors and documents calorie and protein intakes of patients or residents.

Work Environment

Most DTRs 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-lit, 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 DTRs vary depending on the geographic area and the number of hospitals within that area. Job opportunities are available in hospitals, day care centers,

FIGURE 13.4 DTRs work in child care and school lunch programs.

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restaurants, health clubs, WIC programs, Meals on Wheels programs, community health programs, and long-term care facilities. DTRs also work in university foodservice operations, some commercial food establishments, correctional facilities, public schools, health clubs, weight management clinics, food companies, and contract food management companies (FIGURE 13.4).

Based on a 2013 survey conducted by the AND, 33% of dietetic technicians worked in hospitals and 27% worked in long-term care and assisted-living facilities. Only 1% worked in outpatient or ambulatory care settings.[1] Depending on the size of the facility, dietetic technicians often are responsible for both clinical and foodservice management in long-term care facilities (TABLE 13.4).

Educational and Legal Requirements

The requirement for the DTR is completion of at least an associate's degree, which includes clinical training and successful completion of the qualifying exam.

TABLE 13.4 Practice Areas of Dietetic Technicians, 2013

Dietetic technician, clinical	42%
Dietetic technician, long-term care	12%
Nutritionist, women, infants, and children	8%
Director of food and nutrition services	6%
Dietetic technician, foodservice management	10%

Data from: Rogers D. Compensation and Benefits Survey 2013: Education and Job Responsibility Key to Increased Compensation. *J Acad Nutr Diet*. 2014;114(1):17–33.[1]

Education and Training

Individuals interested in becoming a DTR should expect to study a wide variety of topics focusing on food, nutrition, and management. These areas of study are supported by communication, and by the sciences: biological, physiological, behavioral, and social. Becoming a dietetic technician involves a combination of academic preparation and 450 hours of supervised practice culminating in, at minimum, an associate's degree from an institution sponsoring a program accredited by ACEND of AND. Graduates from one of the 42 ACEND-accredited programs are eligible to take the CDR registration examination for dietetic technicians. In addition, graduates of a DPD program (usually with a bachelor's degree) who have completed 450 hours of supervised practice are eligible to take the registration exam to become a DTR.[12]

Licensure

In 2015, Maine was the only state that recognized the DTR as a licensed practitioner. In California, the law exempts DTRs from licensure but specifies that the DTR must work under the supervision of the RDN when providing medical nutrition therapy.[12]

Certification and other Qualifications

DTRs are certified by CDR and are required to complete 75 hours of continuing education every five years to maintain registration status. Another option for DTRs who work in school lunch and child care programs is to become certified as a **School Nutrition Specialist (SNS)** through the School Nutrition Association. Requirements are an associate's degree, one year of work experience in the area of school or child care nutrition programs, and successfully completing the qualifying exam. Continuing education hours are required to maintain certification.[13]

Employment Trends

There were 29,300 DTRs in 2014, with a projected growth rate of 13% between 2014 and 2024.[14] Growth rate for DTRs is faster than the 11% projected for all occupations. Employment of DTRs is expected to grow faster than the average for all occupations through the year 2024 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 assisted living facilities.

Earnings

The salary levels of DTRs vary with region, employment setting, geographical location, scope of responsibility, and so on (FIGURE 13.5). (TABLE 13.5).[1]

FIGURE 13.5 DTRs working in foodservice management command high salaries.
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Related Occupations

Workers with duties similar to those of DTR include associate's-degree nurses, licensed practical nurses, and dietary managers.

DIETETIC ASSISTANTS

Significant Points

- Dietetic assistants have no education requirements but usually receive on-the-job training.
- The dietetic assistant works under the supervision of a foodservice supervisor, DTR, or RDN to complete clerical tasks related to clinical dietetics or food preparation and service.

TABLE 13.5 Median Annual Wages in the Industries Employing the Largest Numbers of Dietetic Technicians, Registered (DTRs), 2013

Director of food and nutrition	$75,000
Nutritionist, women, infants, and children	$49,500
Dietetic technician, foodservice management	$44,800
Dietetic technician, long-term care	$40,060
Dietetic technician, clinical	$40,000

Data from: Rogers D. Compensation and Benefits Survey 2013: Education and Job Responsibility Key to Increased Compensation. *J Acad Nutr Diet*. 2014;114(1):17–33.[1]

The **dietetic assistant (DA)** 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 foodservice manager, dietetic technician, or dietitian, works in the preparation and serving areas of hospitals and other healthcare 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. For those with responsibilities for food preparation and serving will be required to obtain food handler's certification through a local or state government agency.

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 obtaining 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 foodservice supervisors. Accredited healthcare facilities are required to have a person with one or more advanced courses as the head of the dietary department.

ADDITIONAL INFORMATION

For information about a career in dietetics, contact:

- Academy of Nutrition and Dietetics (AND), 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995. Internet: http://www.eatrightpro.org/resources/career

For a list of academic programs to become either a registered dietitian or a dietetic technician, registered, contact:

- Accreditation Council for Education in Nutrition and Dietetics (ACEND), Academy of Nutrition and Dietetics, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995. Internet: http://www.eatrightacend.org/ACEND/content.aspx?id=6442485414

For information on taking the qualifying exam to become certified as a registered dietitian nutritionist or dietetic technician, registered, contact:

- Commission on Dietetic Registration (CDR), Academy of Nutrition and Dietetics. 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995. Internet: https://www.cdrnet.org/certifications

For information about becoming a board-certified specialist in dietetics, contact:

- Commission on Dietetic Registration (CDR), Academy of Nutrition and Dietetics. 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995. Internet: https://www.cdrnet.org/certifications/board-certified-specialist

For information on becoming a certified nutrition specialist® (CNS®), contact:

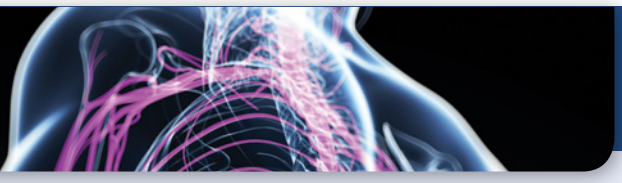
- Board of Certification of Nutrition Specialists, 4707 Willow Springs Road, Suite 207, LaGrange, IL 60525 Internet: http://cbns.org/certification/

For information about certification as a school nutrition specialist (SNS), contact:

- School Nutrition Association. 120 Waterfront Street, Suite 300, National Harbor, MD. 20745. Internet: Internet: https://schoolnutrition.org/SNS/

For information about certification as a dietary manager, contact:

- Association of Nutrition & Foodservice Professionals, 406 Surrey Woods Drive, St. Charles, IL 60174. Internet: http://www.cbdmonline.org/



LEARNING PORTFOLIO

Issues for Discussion

1. Go to the website for the Academy of Nutrition and Dietetics to link to the Fact Sheets *Becoming an RDN* and *Becoming a DTR* under the section for high school students. Compare the educational and professional requirements for each (Internet: http://www.eatrightpro.org/resources/career/become-an-rdn-or-dt r/high-school-students.) Which career path would you prefer and why?
2. View the five-minute video, *Exploring Careers in Dietetics*, and the seven-minute video, *RDNs Nourishing the World*, to learn about different careers in dietetics. Which of the careers described in the videos appeals to you? (Internet: http://www.eatrightpro.org/resource/career/become-an-rdn-or-dtr/high-school-students/exploring-a-career-in-dietetics; Internet: http://www.eatrightpro.org/resource/media/multimedia-news-center/videos/rdns-nourishing-the-world).
3. View the video clip that describes different roles of the DTR at CareerVideos at http://wpc.2a70.edgecastcdn.net/002A70/CareerVideos/29-2051.00.mp4. List work settings for the DTR described in the video.
4. Go to the Accreditation Council for Education in Nutrition and Dietetics (ACEND) website (Internet: http://www.eatrightacend.org/ACEND/content.aspx?id=6442485414). Search for different dietetic internships. Which of the internships appeal to you? Are there internships where you now live?
5. Discuss different options for a graduate of a DPD program who didn't match for a dietetic internship to obtain the necessary supervised practice to be eligible to sit for the registration exam.
6. Discuss the pros and cons of the proposed educational requirements for the RDN and DTR: a master's degree for entry-level generalist RDNs and a bachelor's degree for DTRs.

Enrichment Activities

1. View the video from Healthier U.S. School Challenge program from the USDA Food and Nutrition Program to learn how a Registered Dietitian changed school menus and physical activity in the public schools. Internet: https://www.youtube.com/watch?v=TOKr49KfCBE
2. View bios of school foodservice directors to learn about their jobs. School Nutrition Association. *What It Means to Be a School Nutrition Professional* (not all are RDNs or DTRs). Internet: https://schoolnutrition.org/Cert/WhatItMeansToBeASchoolNutritionProfessional/
3. Go to the website for the Certifying Board for Dietary Managers to learn about the eligibility options for sitting for the certifying exam (Internet: http://www.cbdmonline.org/get-certified/apply)

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CHAPTER 14

Pharmacy*

Key Terms

Compounding
Consultant pharmacists
Internships
Medication profile
Nuclear pharmacists
Nutrition support pharmacists
Pharmaceutical chemistry
Pharmaceuticals
Pharmaceutics
Pharmacology
Pharmacotherapists
Pharmacy administration
Pharmacy aides
Pharmacy technicians
Radiopharmacists
Side effects

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

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

Significant Points

- Excellent job opportunities are expected.
- Earnings are relatively high, but some pharmacists are required to work nights, weekends, and holidays.
- Pharmacists are becoming more involved in counseling patients and planning drug therapy programs.
- Pharmacists must graduate from an accredited college of pharmacy and pass a series of examinations to be licensed.

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 those regarding possible adverse reactions or interactions. An example of a pharmacist explaining medication to a patient is seen in FIGURE 14.1. 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 healthcare 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.

The 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 against 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,

FIGURE 14.1 Pharmacist explaining medication to a patient.

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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.

State and federal boards 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-lit, and well-ventilated areas that resemble small laboratories. Shelves are lined with hundreds of different drug products. An example of pharmacist in a pharmacy setting is seen in **FIGURE 14.2**. 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.

FIGURE 14.2 Pharmacist in pharmacy setting.

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Many community and hospital pharmacies are open around the clock, so pharmacists may be required to work nights, weekends, and holidays. **Consultant pharmacists** may travel to nursing homes or other facilities to monitor patients' drug therapy. Although most pharmacists work full time, about one in four pharmacists worked part time in 2014.

Employment Opportunities

Pharmacists held about 297,100 jobs in 2014. About 54% worked in retail settings, which include community pharmacies that were either independently owned or part of a drugstore chain, grocery store, department store, or mass merchandiser. Most of these community pharmacists were salaried employees, but some were self-employed owners. About 19% of pharmacists worked in hospitals. A small proportion worked in mail order and Internet pharmacies, pharmaceutical wholesalers, offices of physicians, and the federal government.

Educational and Legal Requirements

A license is required in all states, the District of Columbia, and all U.S. territories. In order to obtain a license, pharmacists must earn a Doctor of Pharmacy (PharmD) degree from a college of pharmacy and pass several examinations. There are 124 Doctor of Pharmacy programs fully accredited by the Accreditation Council for Pharmacy Education (ACPE).[1]

Education and Training

Pharmacists must earn a PharmD degree from an accredited college or school of pharmacy. The PharmD degree has replaced the Bachelor of Pharmacy degree, which is no longer being awarded. To be admitted to a PharmD program, an applicant must have completed at least two years of specific professional study. This requirement generally includes courses in mathematics and natural sciences, such as chemistry, biology, and physics, as well as courses in the humanities and social sciences. In addition, most applicants have completed three or more years at a college or university before moving on to a PharmD program, although this is not specifically required. Most PharmD programs require applicants to take the Pharmacy College Admissions Test (PCAT).[2] PharmD programs generally take four years to complete.

Courses offered at colleges of pharmacy are designed to teach students about all aspects of drug therapy. In addition, students learn how to communicate with patients and other healthcare providers about drug information and patient

care. Students also learn professional ethics, concepts of public health, and medication distribution systems management. In addition to receiving classroom instruction, students in PharmD programs spend about one-fourth of their time in a variety of pharmacy practice settings under the supervision of licensed pharmacists.

Some colleges of pharmacy also award the Master of Science degree or the PhD degree. Both degrees are awarded after the completion of a PharmD and are designed for those who want additional clinical, laboratory, and research experience. Areas of graduate study include **pharmaceutics** and **pharmaceutical chemistry** (physical and chemical properties of drugs and dosage forms), **pharmacology** (effects of drugs on the body), and **pharmacy administration.** Many master's and PhD degree holders go on to do research for a drug company or teach at a university.

Other options for pharmacy graduates who are interested in further training include one- or two-year residency programs or fellowships. Pharmacy residencies are postgraduate training programs in pharmacy practice and usually require the completion of a research project. These programs are often mandatory for pharmacists who wish to work in hospitals. Pharmacy fellowships are highly individualized programs designed to prepare participants to work in a specialized area of pharmacy, such as clinical practice or research laboratories. Some pharmacists who own their own pharmacy obtain a master's degree in business administration (MBA). Others may obtain a degree in public administration or public health.

Licensure

A license to practice pharmacy is required in all states, the District of Columbia, and all U.S. territories. To obtain a license, a prospective pharmacist must graduate from a college of pharmacy that is accredited by the ACPE and pass a series of examinations. All states, U.S. territories, and the District of Columbia require the North American Pharmacist Licensure Exam (NAPLEX), which tests pharmacy skills and knowledge.[3] Forty-four states and the District of Columbia also require the Multistate Pharmacy Jurisprudence Exam (MPJE), which tests pharmacy law. Both exams are administered by the National Association of Boards of Pharmacy (NABP). Of the eight states and territories that do not require the MPJE, each has its own pharmacy law exam. In addition to the NAPLEX and MPJE, some states and territories require additional exams that are unique to their jurisdiction.

A pharmacist who wishes to specialize in an area of medical care may become certified from a national association as one who possesses advanced level of knowledge in the respective area. For example, the Certification Board for Diabetes Educators may certify those pharmacists with advanced knowledge of diabetes. Similarly, the Board of Pharmacy Specialties offers certification in specialty areas such as nutrition, oncology, critical care, or pediatrics. These certification boards require varying degrees of work experience in addition to passing an exam and paying a fee.

All jurisdictions except California currently grant license transfers to qualified pharmacists who already are licensed by another jurisdiction. Many pharmacists are licensed to practice in more than one jurisdiction. Most jurisdictions require continuing education for license renewal. Persons interested in a career as a pharmacist should check with individual jurisdiction boards of pharmacy for details on license renewal requirements and license transfer procedures.

Graduates of foreign pharmacy schools may also qualify for licensure in some U.S. states and territories. These individuals must apply for certification from the Foreign Pharmacy Graduate Examination Committee (FPGEC). Once certified, they must pass the Foreign Pharmacy Graduate Equivalency Examination (FPGEE), Test of English as a Foreign Language (TOEFL) exam, and Test of Spoken English (TSE) exam. They then must pass all of the exams required by the licensing jurisdiction, such as the NAPLEX and MPJE. Applicants who graduated from programs accredited by the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) between 1993 and 2004 are exempt from FPGEC certification and examination requirements.

Other Qualifications

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

Advancement

In community pharmacies, pharmacists usually begin at the staff level. Pharmacists in chain drugstores may be promoted to pharmacy supervisor or manager at the store level, then to manager at the district or regional level, and later to an executive position within the chain's headquarters. Hospital pharmacists may advance to supervisory or administrative positions. After they gain experience and secure the necessary capital, some pharmacists become owners or part owners of independent pharmacies. Pharmacists in the pharmaceutical industry may advance into marketing, sales, research, quality control, production, or other areas.

Employment Trends

Employment is expected to increase slower than the average through 2024. As a result of job growth, the replacement of workers leaving the occupation, and the limited capacity of training programs, job prospects should be good.

Employment Change

Employment of pharmacists is expected to grow by 3% between 2014 and 2024, which is slower than the average for all occupations. The increasing numbers of middle-aged

and older people—who use more prescription drugs than younger people—will continue to spur demand for pharmacists throughout the projection period. Other factors likely to increase the demand for pharmacists include scientific advances that will make more pharmaceutical products available, higher rate of chronic diseases, and increasing coverage of prescription drugs by health insurance plans and Medicare.

As the use of prescription drugs increases, demand for pharmacists will grow in most practice settings, such as community pharmacies, hospital pharmacies, and mail-order pharmacies. As the population ages, assisted-living facilities and home care organizations should see particularly rapid growth. Demand will also increase as cost-conscious insurers, in an attempt to improve preventive care, use pharmacists in areas such as patient education and the administration of vaccines.

Demand is also increasing in managed care organizations where pharmacists analyze trends and patterns in medication use, and in **pharmacoeconomics**—the cost and benefit analysis of different drug therapies. New jobs also are being created in disease management—the development of new methods for curing and controlling diseases—and in sales and marketing. Rapid growth is also expected in *pharmacy informatics*—the use of information technology to improve patient care through medication use.

Job Prospects

The number of pharmacy schools has grown in recent years, producing a greater number of pharmacy school graduates. With larger graduating classes, there is more competition for pharmaceutical jobs. Students who choose to complete residency programs or certification from the Board of Pharmacy Specialists gain additional experience and greater job prospects. TABLE 14.1 shows some projection data provided by the U.S. Department of Labor.

Earnings

The median annual wage and salary of pharmacists in May 2014 was $120,950. The middle 50% earned between $106,520 and $138,010 annually. The lowest 10% earned less than $89,320, and the highest 10% earned more than $150,550 per year.

Related Occupations

Pharmacy technicians and pharmacy aides also work in pharmacies. Persons in other professions who may work with pharmaceutical compounds include biological scientists, medical scientists, chemists, and materials scientists. Increasingly, pharmacists are involved in patient care and therapy, work that they have in common with physicians and surgeons.

Additional Information

For information on pharmacy as a career, preprofessional and professional requirements, programs offered by colleges of pharmacy, and student financial aid, contact:

- American Association of Colleges of Pharmacy, 1727 King St., Alexandria, VA 22314. Internet: http://www.aacp.org
- Accreditation Council for Pharmacy Education, 135 S. LaSalle Street, Suite 1400, Chicago, IL 60603-4810. Internet: https://www.acpe-accredit.org/default.asp

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
- National Association of Chain Drug Stores, 1776 Wilson Blvd., Suite, 200, Arlington, VA 22209. Internet: http://www.nacds.org
- Academy of Managed Care Pharmacy, 100 North Pitt St., Suite 400, Alexandria, VA 22314. Internet: http://www.amcp.org
- American Pharmacists Association, 2215 Constitution Ave. NW, Washington, DC 20037. Internet: http://www.pharmacist.com

Information on the North American Pharmacist Licensure Exam (NAPLEX) and the Multistate Pharmacy Jurisprudence Exam (MPJE) is available from

- National Association of Boards of Pharmacy, 1600 Feehanville Dr., Mount Prospect, IL 60056. Internet: http://www.nabp.net

State licensure requirements are available from each state's board of pharmacy. Information on specific college

TABLE 14.1 Projections Data for Pharmacists, 2014–2024

			Change, 2014–2024	
Occupational Title	Employment, 2014	Projected Employment, 2024	Number	Percentage
Pharmacists	297,100	306,200	9,100	3%

entrance requirements, curricula, and financial aid is available from any college of pharmacy.

PHARMACY TECHNICIANS AND AIDES

Significant Points

- Job opportunities are expected to be good, especially for those with certification or previous work experience.
- Many technicians and aides work evenings, weekends, and holidays.
- About 75% of jobs are in a retail setting.

Work Description

Pharmacy technicians and aides help licensed pharmacists prepare prescription medications, provide customer service, and perform administrative duties within a pharmacy setting. **Pharmacy technicians** generally are responsible for receiving prescription requests, counting tablets, and labeling bottles, while **pharmacy aides** perform administrative functions such as answering phones, stocking shelves, and operating cash registers. In organizations that do not have aides, however, pharmacy technicians may be responsible for these clerical duties.

Pharmacy technicians who work in retail or mail-order pharmacies have various responsibilities, depending on state rules and regulations. Technicians receive written prescription requests from patients. They also may receive prescriptions sent electronically from doctors' offices, and in some states they are permitted to process requests by phone. They must verify that the information on the prescription is complete and accurate. To prepare the prescription, technicians retrieve, count, pour, weigh, measure, and sometimes mix the medication. Then they prepare the prescription labels, select the type of 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 the patient. Technicians may establish and maintain patient profiles, as well as prepare insurance claim forms. Technicians always refer any questions regarding prescriptions, drug information, or health matters to a pharmacist.

In hospitals, nursing homes, and assisted-living facilities, technicians have added responsibilities, including preparing sterile solutions and delivering medications to nurses or physicians. Technicians may also record the information about the prescribed medication onto the patient's profile.

Pharmacy aides work closely with pharmacy technicians. They primarily perform administrative duties such as answering telephones, stocking shelves, and operating cash registers. They also may prepare insurance forms and maintain patient profiles. They may organize inventory and alert pharmacists to shortages in medications or supplies. Unlike pharmacy technicians, pharmacy aides do not prepare prescriptions or mix medications.

Work Environment

Pharmacy technicians and aides 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.

Technicians and aides often have varying schedules that include nights, weekends, and holidays. In facilities that are open 24 hours a day, such as hospital pharmacies, technicians and aides may be required to work nights. Many technicians and aides work part time.

Employment Opportunities

Pharmacy technicians and aides held about 372,500 jobs in 2014. Of these, about 355,300 were pharmacy technicians and about 41,240 were pharmacy aides. About 70% of jobs were in a retail setting, and about 13% were in hospitals.

Educational and Legal Requirements

There is no national training standard for pharmacy technicians, but employers favor applicants who have formal training, certification, or previous experience. There also are no formal training requirements for pharmacy aides, but a high school diploma may increase an applicant's prospects for employment.

Education and Training

There are no standard training requirements for pharmacy technicians, but some states require a high school diploma or its equivalent. Although most pharmacy technicians receive informal on-the-job training, employers favor those who have completed formal training and certification. On-the-job training generally ranges between 3 and 12 months. An example of on-the-job training is seen in FIGURE 14.3.

Formal technician education programs are available through a variety of organizations, including community colleges, vocational schools, hospitals, and the military. These programs range from six months to two years and include classroom and laboratory work. They cover a variety of subject areas, such as medical and pharmaceutical terminology, pharmaceutical calculations, pharmacy record keeping, pharmaceutical techniques, and pharmacy law and ethics. Technicians also are required to learn the names, actions, uses, and doses of the medications with which they work. Many training programs include **internships**, in which students gain hands-on experience in actual pharmacies. After completion, students receive a diploma, a certificate, or an Associate's degree, depending on the program.

There are no formal education requirements for phar-

FIGURE 14.3 Pharmacist training a pharmacy technician.
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macy aides, but employers may favor applicants with a high school diploma or its equivalent. Experience operating a cash register, interacting with customers, managing inventory, and using computers may be helpful. Pharmacy aides also receive informal on-the-job training that generally lasts less than three months.

Certification and Other Qualifications

In most states, pharmacy technicians must be registered with the state board of pharmacy. Eligibility requirements vary, but in some states applicants must possess a high school diploma or its equivalent and pay an application fee.

Most states do not require technicians to be certified, but voluntary certification is available through several private organizations. The Pharmacy Technician Certification Board (PTCB)[4] and the National Healthcareer Association[5] administer national certification examinations. Certification through such programs may enhance an applicant's prospects for employment and is required by some states and employers. To be eligible for either exam, candidates must have a high school diploma or its equivalent and no felony convictions of any kind. In addition, applicants for the PTCB exam must not have had any drug-related or pharmacy-related convictions, including misdemeanors. Many employers will reimburse the cost of the exams.

Under these programs, technicians must be recertified every two years. Recertification requires 20 hours of continuing education within the two-year certification period. Continuing education hours can be earned from several different sources, including colleges, pharmacy associations, and pharmacy technician training programs. Up to 10 hours of continuing education also can be earned on the job under the direct supervision and instruction of a pharmacist.

Good customer service and communication skills are needed because pharmacy technicians and aides interact with patients, coworkers, and healthcare professionals. Basic mathematics, spelling, and reading skills also are important, as technicians must interpret prescription orders and verify drug doses. Technicians also must be precise: Details are sometimes a matter of life and death.

Advancement

Advancement opportunities generally are limited, but in large pharmacies and health systems, pharmacy technicians and aides with significant training or experience can be promoted to supervisory positions. Some may advance into specialty positions such as chemotherapy technician or nuclear pharmacy technician. Others may move into sales. With a substantial amount of formal training, some technicians and aides go on to become pharmacists.

Employment Trends

Employment is expected to increase much faster than average, and job opportunities are expected to be good.

Employment Change

Employment of pharmacy technicians and aides is expected to increase by 9% from 2014 to 2024, which is faster than the average for all occupations. The increased number of middle-aged and elderly people—who use more prescription drugs than younger people—will spur demand for pharmacy workers throughout the projection period. In addition, as scientific advances lead to new drugs, and as more people obtain prescription drug coverage, pharmacy workers will be needed in growing numbers. Prescription drug coverage will continue to rise following the introduction of federally mandated health insurance.

Employment of pharmacy technicians is expected to increase by 9%. As cost-conscious insurers begin to use pharmacies as patient-care centers and pharmacists become more involved in patient care, pharmacy technicians will continue to see an expansion of their role in the pharmacy. In addition, they will increasingly adopt some of the administrative duties that were previously performed by pharmacy aides, such as answering phones and stocking shelves. As a result of this development, demand for pharmacy aides should decrease, and employment is expected to decline moderately, decreasing by 6% over the projection period.

Job Prospects

Job opportunities for pharmacy technicians are expected to be good, especially for those with previous experience, formal training, or certification. Job openings will result from employment growth as well as the need to replace workers who transfer to other occupations or leave the labor force.

Despite declining employment, job prospects for pharmacy aides also are expected to be good. As people leave this occupation, new applicants will be needed to fill the positions that remain (see **TABLE 14.2**).

TABLE 14.2 Projected Employment Data for Pharmacy Technicians, 2014–2024

			Change, 2014–2024	
Occupational Title	Employment 2014	Projected Employment, 2024	Number	Percentage
Pharmacy technicians	372,500	407,200	34,700	9%

Earnings

Median hourly wages of pharmacy technicians in May 2014 were $29,810. The lowest 10% earned less than $20,730, and the highest 10% earned more than $43,900.

Median hourly wages of wage and salary pharmacy aides were $11.15 in May 2014. The middle 50% earned between $19,440 and $29,180. The lowest 10% earned less than $17,440 and the highest 10% earned more than $37,930.

Certified technicians may earn more than noncertified technicians. Some technicians and aides belong to unions representing hospital or grocery store workers.

Related Occupations

Other occupations related to health care include dental assistants, medical assistants, medical records and health information technicians, medical transcriptionists, and pharmacists.

Additional Information

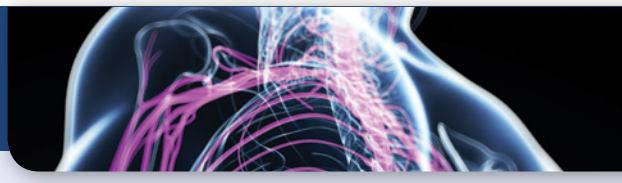
For information on pharmacy technician certification programs, contact:

- Pharmacy Technician Certification Board, 2215 Constitution Ave. NW, Suite 101, Washington DC 20037-2985. Internet: http://www.ptcb.org
- National Healthcareer Association, 11161 Overbrook Road, Leawood, KS 66211. Internet: http://www.nhanow.com/home.aspx
- American Society of Health-System Pharmacists, 7272 Wisconsin Ave., Bethesda, MD 20814. Internet: http://www.ashp.org

For pharmacy technician career information, contact:

- National Pharmacy Technician Association, P.O. Box 683148, Houston, TX 77268. Internet: http://www.pharmacytechnician.org

LEARNING PORTFOLIO

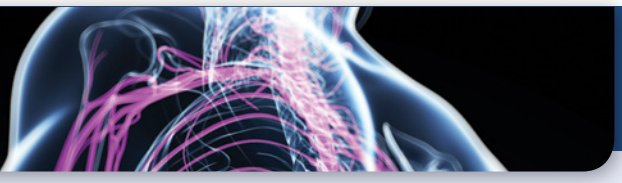


Issues for Discussion

1. Medications are sometimes expensive; for this reason, consumers sometimes look to online, out-of-country retailers to purchase medications at a lower price. Discuss what dangers may be present when buying medications from an online, out-of-country retailer. At minimum, address issues such as the possibility of purchasing counterfeit medications or whether the retailer possesses a legitimate license or certification.
2. Medications are accompanied by instructions on their use. Adhering to these instructions is sometimes problematic. Brainstorm reasons why patients might not adhere to these instructions and the effect failure to adhere to these instructions might have.
3. Which of the jobs discussed in this chapter would you be most likely to recommend to a friend or acquaintance interested in working in the healthcare field? Explain your selection and rationale.

Enrichment Activities

1. Using medicines to treat and prevent human disease has existed since ancient times. Search the Internet for examples of remedies that in today's time might seem odd or not appropriate for use. Prepare a list of such remedies and what the remedies were designed to treat, cure, or prevent. Share that list with your instructor and/or class.
2. Interest in using medicines to treat and prevent human disease has spanned many centuries. Create a timeline (either as a written narrative piece, a poster, or an infographic) tracing the progression of pharmacy as a science and include the influence of the ancient Greeks and Romans, the Arabs, and those in the Renaissance. Name key players in the development of this field.
3. View the career videos entitled *Inspiring Journeys* at http://www.pharmacyforme.org/index,php/inspiring-journeys. Discuss your impressions of the variety of opportunities within the pharmacy profession with your instructor and classmates.



LEARNING PORTFOLIO

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3. North American Pharmacist Licensure Exam. Internet: http://www.nabp.net/programs/examination/naplex
4. Pharmacy Technician Certification Board. Inernet: http://www.ptcb.org/
5. National Healthcareer Association. Internet: http://www.nhanow.com/certifications/pharmacy-technician

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CHAPTER 15

Optometry*

Key Terms

Apprenticeship programs
Corrective lenses
Dispensing optician
Doctor of Optometry
Franchises
Health and visual sciences
Laser surgery
Lensometer
Low-vision rehabilitation
Ocular disease
Ophthalmic laboratory technician
Ophthalmologists
Optics
Optometrists
Optometry Admissions Test (OAT)
Vision therapy

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

OPTOMETRISTS
Significant Points

- Admission to optometry school is competitive; only about one out of three applicants was accepted in 2013.
- Graduation from an accredited college of optometry and a state license administered by the National Board of Examiners in Optometry are required.
- Employment is expected to grow much faster than the average in response to the vision care needs of a growing and aging population.
- Job opportunities are likely to be excellent.

Work Description

Optometrists, also known as doctors of optometry, or ODs, are the main providers of vision care. They examine people's eyes to diagnose vision problems, such as nearsightedness and farsightedness, and they test patients' depth and color perception and ability to focus and coordinate the eyes (FIGURE 15.1). Optometrists may prescribe eyeglasses or contact lenses, or they may provide other treatments, such as **vision therapy** or **low-vision rehabilitation**.

Optometrists also test for glaucoma and other eye diseases and diagnose conditions caused by systemic diseases such as diabetes and high blood pressure, referring patients to other health practitioners as needed. They prescribe medication to treat vision problems or eye diseases, and some provide preoperative and postoperative care to cataract patients, as well as to patients who have had corrective **laser surgery**. Like other physicians, optometrists encourage preventive measures by promoting nutrition and hygiene education to their patients to minimize the risk of eye disease.

FIGURE 15.1 Boy receiving an eye exam.
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Although most work in a general practice as a primary care optometrist, some optometrists prefer to specialize in a particular field, such as contact lenses, geriatrics, pediatrics, or vision therapy. As a result, an increasing number of optometrists are forming group practices in which each group member specializes in a specific area while still remaining a full-scope practitioner. For example, an expert in low-vision rehabilitation may help legally blind patients by custom fitting them with a magnifying device that will enable them to read. Some may specialize in occupational vision, developing ways to protect workers' eyes from on-the-job strain or injury. Others may focus on sports vision, head trauma, or **ocular disease** and special testing. A few optometrists teach optometry, perform research, or consult.

Most optometrists are private practitioners who also handle the business aspects of running an office, such as developing a patient base, hiring employees, keeping paper and electronic records, and ordering equipment and supplies. Optometrists who operate franchise optical stores also may have some of these duties.

Optometrists should not be confused with **ophthalmologists** or **dispensing opticians**. Ophthalmologists are physicians who perform eye surgery, as well as diagnose and treat eye diseases and injuries. Like optometrists, they also examine eyes and prescribe eyeglasses and contact lenses (FIGURE 15.2). Dispensing opticians fit and adjust eyeglasses and, in some states, may fit contact lenses according to prescriptions written by ophthalmologists or optometrists.

Work Environment

Optometrists usually work in their own offices, which are clean, well-lit, and comfortable. Although most full-time

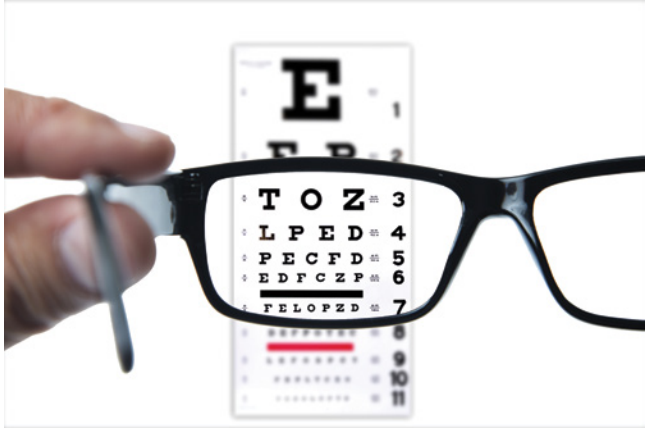

FIGURE 15.2 Optometrists, ophthalmologists, and dispensing opticians may all fit patients for contact lenses or glasses.
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optometrists work standard business hours, some work weekends and evenings to suit the needs of patients. Emergency calls, once uncommon, have increased with the passage of therapeutic-drug laws expanding optometrists' ability to prescribe medications.

Employment Opportunities

Optometrists held about 40,600 jobs in 2014. Salaried jobs for optometrists were primarily in offices of optometrists; offices of physicians, including ophthalmologists; and health and personal care stores, including optical goods stores. A few salaried jobs for optometrists were in hospitals, the federal government, or outpatient care centers, including health maintenance organizations. About 49% of optometrists are self employed. According to a 2014 survey by the American Optometric Association, most self-employed optometrists worked in private practice or in partnership with other healthcare professionals. A small number worked for optical chains or **franchises** or as independent contractors.

Educational and Legal Requirements

The **Doctor of Optometry** degree requires the completion of a four-year program at an accredited school of optometry, preceded by at least three years of pre-optometric study at an accredited college or university. All states require optometrists to be licensed.

Education and Training

Optometrists need a Doctor of Optometry degree, which requires the completion of a four-year program at an accredited school of optometry. In 2015, there were 20 colleges of optometry in the United States and one in Puerto Rico that offered programs accredited by the Accreditation Council on Optometric Education of the American Optometric Association.[1] Requirements for admission to optometry schools include college courses in English, mathematics, physics, chemistry, and biology. Because a strong background in science is important, many applicants to optometry school major in a science, such as biology or chemistry, as undergraduates. Other applicants major in another subject and take many science courses offering laboratory experience.

Admission to optometry school is competitive; fewer than half of the applicants were accepted for the 2013–2014 school year. All applicants must take the **Optometry Admissions Test (OAT)**, a standardized exam that measures academic ability and scientific comprehension.[2] The OAT consists of four tests: survey of the natural sciences, such as biology, general chemistry, and organic chemistry; reading comprehension; physics; and quantitative reasoning. As a result, most applicants take the test after their sophomore or junior year in college, allowing them an opportunity to take the test again and raise their score. A few applicants are accepted to optometry school after three years of college and complete their bachelor's degree while attending optometry school. However, most students accepted by a school or college of optometry have completed an undergraduate degree. Each institution has its own undergraduate prerequisites, so applicants should contact the school or college of their choice for specific requirements.

FIGURE 15.3 Postgraduate clinical residencies are available for optometrists wishing to specialize in one of several areas, such as cornea and contact lens care.
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Optometry programs include classroom and laboratory study of **health and visual sciences** and clinical training in the diagnosis and treatment of eye disorders. Courses in pharmacology, **optics**, vision science, biochemistry, and systemic diseases are included.

One-year postgraduate clinical residency programs are available for optometrists who wish to obtain advanced clinical competence within a particular area of optometry (**FIGURE 15.3**). Specialty areas for residency programs include family practice optometry, pediatric optometry, geriatric optometry, vision therapy and rehabilitation, low-vision rehabilitation, cornea and contact lenses, refractive and ocular surgery, primary eye care optometry, and ocular disease.

Licensure

All states and the District of Columbia require that optometrists be licensed. Applicants for a license must have a Doctor of Optometry degree from an accredited optometry school and must pass both a written national board examination and a national, regional, or state clinical examination. The written and clinical examinations of the National Board of Examiners in Optometry usually are taken during the student's academic career. Many states also require applicants to pass an examination on relevant state laws. Licenses must be renewed every one to three years and, in all states, continuing education credits are needed for renewal.

Other Qualifications

Business acumen, self-discipline, and the ability to deal tactfully with patients are important for success. The work of optometrists also requires attention to detail and manual dexterity.

TABLE 15.1 Projections Data for Optometrists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Optometrists	40,600	51,600	11,000	27%

Advancement

Optometrists who wish to teach or conduct research may study for a master's degree or PhD in visual science, physiological optics, neurophysiology, public health, health administration, health information and communication, or health education.

Employment Trends

Employment of optometrists is expected to grow much faster than the average for all occupations through 2024, in response to the vision care needs of a growing and aging population. Excellent job opportunities are expected.

Employment Change

Employment of optometrists is projected to grow 27% between 2014 and 2024. A growing population that recognizes the importance of good eye care will increase demand for optometrists. Also, an increasing number of health insurance plans that include vision care should generate more job growth.

As the population ages, there will likely be more visits to optometrists and ophthalmologists because of the onset of vision problems that occur at older ages, such as cataracts, glaucoma, and macular degeneration. In addition, increased incidences of diabetes and hypertension in the general population as well as in the elderly will generate greater demand for optometric services as these diseases often affect eyesight.

Employment of optometrists would grow more rapidly if not for productivity gains that are expected to allow each optometrist to see more patients. These expected gains stem from the greater use of optometric assistants and other support personnel, who can reduce the amount of time optometrists need with each patient.

The increasing popularity of laser surgery to correct some vision problems was previously thought to have an adverse effect on the demand for optometrists as patients often do not require eyeglasses afterward. However, optometrists will still be needed to provide preoperative and postoperative care for laser surgery patients; therefore, laser eye surgery will likely have little to no impact on the employment of optometrists.

Job Prospects

Excellent job opportunities are expected over the next decade because there are only 21 schools of optometry in the United States, including Puerto Rico, resulting in a limited number of graduates—about 1,500 —each year. This number is not expected to keep pace with demand. However, admission to optometry school is competitive.

In addition to job growth, the need to replace optometrists who retire will also create many employment opportunities. According to the American Optometric Association, nearly one-quarter of practicing optometrists are approaching retirement age. As they begin to retire, many opportunities will arise, particularly in individual and group practices. TABLE 15.1 shows some projection for job growth for optometrists.

Earnings

Median annual wages of salaried optometrists were $101,410 in May 2014. The middle 50% earned between $78,000 and $132,580. Salaried optometrists tend to earn more initially than do optometrists who set up their own practices. In the long run, however, those in private practice usually earn more.

According to the American Optometric Association (AOA), the average annual income for self-employed optometrists was $156,550 in 2012.

Self-employed optometrists, including those in individual, partnerships, and group practice, continue to earn higher income than those in other settings. Optometrists who own their own practice and are not affiliated with a regional or national optical company earn $169,115; those practicing in a setting affiliated with a regional or national optical company and have some ownership in the company earn $155,985. By contrast, those optometrists who do not have an ownership stake in their practice tend to earn less money. For example, optometrists in a multidisciplinary setting such as a hospital or clinic earn $111,831; those affiliated with a regional or national optical company earn $107,620; and those in private practice earn $98,858. Self-employed optometrists must also provide their own benefits. Practitioners associated with optical chains typically enjoy paid vacation, sick leave, and pension contributions.

Median annual wages in the industries employing the largest numbers of optometrists in May 2014 are shown in TABLE 15.2.

Related Occupations

Other workers who apply scientific knowledge to prevent, diagnose, and treat disorders and injuries include chiropractors, dentists, physicians and surgeons, podiatrists, psychologists, and veterinarians.

TABLE 15.2 Median Annual Earnings in the Industries Employing the Largest Numbers of Optometrists, May 2014

Federal executive branch (OES designation)	$63,990
Health and personal care stores	$102,430
Offices of physicians	$139,050
Outpatient care centers	$117,450
Offices of other healthcare practitioners	$109,430

Data from: US Bureau of Labor Statistics, May 2014, http://www.bls.gov/oes/current/oes291041.htm#ind

FIGURE 15.4 Dispensing opticians assist people with corrective lenses and frames.

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Additional Information

For information on optometry as a career and a list of accredited optometric institutions of education, contact:

- Association of Schools and Colleges of Optometry, 6110 Executive Blvd., Suite 420, Rockville, MD 20852. Internet: http://www.opted.org

Additional career information is available from

- American Optometric Association, Educational Services, 243 N. Lindbergh Blvd., St. Louis, MO 63141. Internet: http://www.aoa.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 officers of individual optometry schools.

OPTICIAN, DISPENSING

Significant Points

- Employers increasingly prefer dispensing opticians to complete certification or graduate from an accredited two-year associate's degree program in opticianry; some large employers may provide an apprenticeship.
- Twenty-two states require a license to practice.
- Employment growth is projected to be faster than average and reflect the steady demand for corrective lenses and fashionable eyeglass frames.
- Job opportunities are likely to be very good.

Work Description

Helping people see better and look good at the same time is the job of a dispensing optician. Dispensing opticians help select and fit eyeglasses and contact lenses for people with eye problems, following prescriptions written by ophthalmologists or optometrists. Dispensing opticians recommend eyeglass frames, lenses, and lens coatings after considering the prescription and the customer's occupation, habits, and facial features (**FIGURE 15.4**). When fitting new eyeglasses, opticians use sophisticated diagnostic instruments to measure various characteristics of a client's eyes, including the thickness, width, curvature, and surface topography of the cornea. They also obtain a customer's prescription history to remake eyeglasses or contact lenses, or they may verify a prescription with the examining optometrist or ophthalmologist.

Dispensing opticians prepare work orders that give **ophthalmic laboratory technicians** the information they need to grind and insert lenses into a frame. The work order includes prescriptions for lenses and information on their size, material, color, and style. Some dispensing opticians grind and insert lenses themselves. They may also apply tint to lenses. After the glasses are made, dispensing opticians verify that the lenses meet the specifications, and then they may reshape or bend the frames with pliers for a custom fit.

Many opticians also spend time fixing and refitting broken frames, as well as instructing clients about wearing or caring for eyeglasses. Additionally, administrative duties have become a major part of their work, including keeping records on customers' prescriptions, work orders, and payments, and tracking inventory and sales.

Some dispensing opticians, after additional education and training, specialize in fitting contacts, artificial eyes, or cosmetic shells to cover blemished eyes. To fit contact lenses, dispensing opticians measure the shape and size of the eye, select the type of contact lens material, and prepare work orders specifying the prescription and lens size. Dispensing opticians observe customers' eyes, corneas, lids, and contact lenses with sophisticated instruments and microscopes. During several follow-up visits, opticians teach the proper insertion, removal, and care of contact lenses.

Work Environment

Dispensing opticians work indoors, mainly in medical offices, optical stores, or in large department or club stores. Opticians spend a fair amount of time on their feet. If they prepare lenses, they need to take precautions against the hazards of glass cutting, chemicals, and machinery. Although most dispensing opticians work during regular business hours, those in retail stores may work evenings and weekends. Some work part time.

Employment Opportunities

Dispensing opticians held about 75,200 jobs in 2014. About 39% worked in optometrists' offices. Another 32% worked in health and personal care stores, including optical goods stores. Many of these stores offer one-stop shopping where customers can have their eyes examined, choose frames, and have glasses made on the spot. Some opticians work in optical departments of department stores or other general merchandise stores, such as warehouse clubs and superstores. About 11% worked in offices of physicians, primarily ophthalmologists, who sell glasses directly to patients; 1% were self employed and ran their own unincorporated businesses.

Educational and Legal Requirements

Many employers increasingly prefer dispensing opticians to complete certification or graduate from an accredited two-year associate's degree program in opticianry; some large employers may provide an apprenticeship that may last two years or longer.

Education and Training

Although a high school diploma is all that is required to get into this occupation, most workers have completed at least some college courses or a degree. Classes in physics, basic anatomy, algebra, and trigonometry, as well as experience with computers are particularly valuable. These classes prepare dispensing opticians to learn job skills, including optical mathematics, optical physics, and the use of precision measuring instruments and other machinery and tools.

Structured **apprenticeship programs** are more commonly available in states where licensing is not mandatory, and these programs are usually offered by large employers. Apprentices receive technical instruction along with training in office management and sales. Under the supervision of an experienced optician, optometrist, or ophthalmologist, apprentices work directly with patients, fitting eyeglasses and contact lenses.

Formal training in the field is offered in community colleges and in a few four-year colleges and universities. As of 2015, the Commission on Opticianry Accreditation accredited 21 associate's degree and certificate programs in 13 states.[3] Graduation from an accredited program in opticianry can be advantageous as it provides a nationally recognized credential.

Licensure

As of 2012, about half of the states require dispensing opticians to be licensed. States may require individuals to pass one or more of the following for licensure: a state practical examination, a state written examination, and certification examinations offered by the American Board of Opticianry (ABO) and the National Contact Lens Examiners (NCLE). To qualify for the examinations, states often require applicants to complete postsecondary training or work as apprentices for two to four years.

Some states allow graduates of opticianry programs to take the licensure exam immediately upon graduation; others require a few months to a year of experience. Continuing education is commonly required for licensure renewal. Information about specific licensing requirements is available from the state board of occupational licensing.

Certification

Any optician can apply to the ABO and the NCLE for certification of their skills. Certification signifies to customers and employers that an optician has a certain level of expertise. Certification must be renewed every three years through continuing education. The State of Texas offers voluntary registration for the occupation.

Other Qualifications

Dispensing opticians deal directly with the public, so they should be tactful, pleasant, and able to communicate well. Fitting contact lenses requires considerable skill, care, and patience, so manual dexterity and the ability to do precision work are essential.

Advancement

Some experienced dispensing opticians open their own optical stores. Others become managers of optical stores or sales representatives for wholesalers or manufacturers of eyeglasses or lenses.

Employment Trends

Employment of dispensing opticians is expected to grow faster than average for all occupations through 2024, as the population ages and demand for **corrective lenses** increases. Very good job prospects are expected.

Employment Change

Employment in this occupation is expected to rise 24% over the 2014–2024 decade. Middle age is a time when many

TABLE 15.3 Projections Data for Dispensing Opticians, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Opticians, dispensing	75,200	93,000	17,800	24%

individuals use corrective lenses for the first time, and elderly persons generally require more vision care than others. As the share of the population in these older age groups increases and as people live longer, more opticians will be needed to provide service to them. In addition, awareness of the importance of regular eye exams is increasing across all age groups, especially children and those older than 65 years of age. Recent trends indicate a movement toward a "low-vision" society, where a growing number of people view things that are closer in distance, such as computer monitors, over the course of an average day. This trend is expected to increase the need for eye care services. Fashion also influences demand. Frames come in a growing variety of styles, colors, and sizes, encouraging people to buy more than one pair.

Somewhat moderating the need for optician services is the increasing use of laser surgery to correct vision problems. Although the surgery remains relatively more expensive than eyewear, patients who successfully undergo this surgery may not require glasses or contact lenses for several years. Also, new technology is allowing workers to make the measurements needed to fit glasses, therefore allowing dispensing opticians to work faster and limiting the need for more workers.

Job Prospects

Overall, the need to replace dispensing opticians who retire or leave the occupation will result in very good job prospects. Employment opportunities for opticians in offices of optometrists—the largest employer—will be particularly good as an increasing number of ophthalmologists are expected to utilize better-trained opticians to handle more tasks, allowing ophthalmologists to see more patients.

Job opportunities also will be good at general merchandise stores because this segment is expected to experience much faster than average growth, as well as high turnover because of less favorable working conditions, such as long hours and mandatory weekend shifts.

Nonetheless, the number of job openings overall will be somewhat limited because the occupation is small. Also, dispensing opticians are vulnerable to changes in the business cycle because eyewear purchases often can be deferred for a time. Job prospects will be best for those who have certification and those who have completed a formal opticianry program. Job candidates with extensive knowledge of new technology, including new refraction systems, framing materials, and edging techniques, should also experience favorable conditions. TABLE 15.3 shows some projections for employment.

Earnings

Median annual wages of dispensing opticians were $34,280 in May 2014. The middle 50% earned between $26,440 and $44,470. The lowest 10% earned less than $21,510, and the highest 10% earned more than $55,160. Median annual wages in the industries employing the largest numbers of dispensing opticians in May 2014 are shown in TABLE 15.4.

Benefits for opticians are generally determined by the industries in which they are employed. In general, those who work part time or in small retail shops have fewer benefits than those who may work for large optical chains or department stores. Self-employed opticians must provide their own benefits.

Related Occupations

Other workers who deal with customers and perform delicate work include jewelers and precious stone and metal workers, ophthalmic laboratory technicians, and orthotists and prosthetists.

Additional Information

To learn about apprenticeship programs and state licensing requirements, contact:

- Opticians Association of America, 4064 E. Fir Hill Dr., Lakeland, TN 38002. Internet: http://www.oaa.org

TABLE 15.4 Median Annual Earnings in the Industries Employing the Largest Numbers of Dispensing Opticians, May 2014

Other general merchandise stores	$34,150
Health and personal care stores	$38,660
Offices of physicians	$40,050
Department stores	$30,800
Offices of other healthcare practitioners	$34,210

To learn about voluntary certification for opticians who fit eyeglasses, as well as a list of state licensing boards for opticians, contact:

- American Board of Opticianry, 6506 Loisdale Rd., Suite 209, Springfield, VA 22150. Internet: http://www.abo.org/

For information on voluntary certification for dispensing opticians who fit contact lenses, contact:

- National Contact Lens Examiners, 6506 Loisdale Rd., Suite 209, Springfield, VA 22150. Internet: http://www.abo-ncle.org

For a list of the 34 associate's degree and certificate programs accredited by the Commission on Opticianry Accreditation, contact:

- National Federation of Opticianry Schools, 2800 Springport Rd., Jackson, MI 49202. Internet: http://www.nfos.org

OPHTHALMIC LABORATORY TECHNICIANS

Significant Points

- Most technicians learn their craft on the job, but many employers prefer to hire those with formal training.
- Job opportunities should be favorable because few people seek these positions.

Work Description

When patients require a medical device to help them see clearly, their healthcare providers send requests for such devices to **ophthalmic laboratory technicians**. These technicians produce a variety of implements to help patients.

Ophthalmic laboratory technicians—also known as manufacturing opticians, optical mechanics, or optical goods workers—make prescription eyeglasses or contact lenses. Prescription lenses are curved in such a way that light is correctly focused onto the retina of the patient's eye, improving his or her vision. Some ophthalmic laboratory technicians manufacture lenses for other optical instruments, such as telescopes and binoculars. Ophthalmic laboratory technicians cut, grind, edge, and finish lenses according to specifications provided by dispensing opticians, optometrists, or ophthalmologists, and may insert lenses into frames to produce finished glasses. Although some lenses still are produced by hand, technicians are increasingly using automated equipment to make lenses.

Ophthalmic laboratory technicians should not be confused with workers in other vision care occupations. Ophthalmologists and optometrists are "eye doctors" who examine eyes, diagnose and treat vision problems, and prescribe corrective lenses. Ophthalmologists are physicians who also perform eye surgery.

Ophthalmic laboratory technicians read prescription specifications, select standard glass or plastic lens blanks, and then mark them to indicate where the curves specified on the prescription should be ground. They place the lens in the lens grinder, set the dials for the prescribed curvature, and start the machine. After a minute or so, the lens is ready to be "finished" by a machine that rotates it against a fine abrasive to grind it and smooth out rough edges. The lens is then placed in a polishing machine with an even finer abrasive, to polish it to a smooth, bright finish.

Next, the technician examines the lens through a **lensometer**, an instrument similar in shape to a microscope, to make sure that the degree and placement of the curve are correct. The technician then cuts the lenses and bevels the edges to fit the frame, dips each lens into dye if the prescription calls for tinted or coated lenses, polishes the edges, and assembles the lenses and frame parts into a finished pair of glasses.

In small laboratories, technicians usually handle every phase of the operation. In large ones, in which virtually every phase of the operation is automated, technicians may be responsible for operating computerized equipment. Technicians also inspect the final product for quality and accuracy.

Work Environment

Ophthalmic laboratory technicians generally work in clean, well-lit, and well-ventilated laboratories. They have limited contact with the public. Salaried laboratory technicians usually work 40 hours a week, but some work part time. At times, technicians wear goggles to protect their eyes, gloves to handle hot objects, or masks to avoid inhaling dust. They may spend a great deal of time standing.

Employment Opportunities

Ophthalmic laboratory technicians held about 30,200 jobs in 2014. Many of the salaried jobs were in medical equipment and supply manufacturing laboratories, which usually are small, privately owned businesses with fewer than five employees. However, some laboratories are large; a few employ more than 1,000 workers. Others worked in health and personal care stores, optometrists' offices, and professional and commercial equipment and supplies merchant wholesalers.

Educational and Legal Requirements

Most ophthalmic laboratory technicians learn their craft on the job; many employers, however, prefer to hire those with formal training or at least a high school diploma.

Education and Training

High school students interested in becoming ophthalmic laboratory technicians should take courses in science, mathematics, computer programming, and art. Ophthalmic laboratory technicians usually begin as helpers and gradually learn new skills as they gain experience.

Ophthalmic laboratory technicians start on simple tasks if they are training to produce lenses by hand. They may begin with marking or blocking lenses for grinding, progress to grinding, cutting, edging, and beveling lenses, and finally to assembling the eyeglasses. Depending on individual aptitude, it may take up to six months to become proficient in all phases of the work.

Employers filling trainee jobs prefer applicants who are high school graduates. Courses in science, mathematics, and computers are valuable; manual dexterity and the ability to do precision work are essential. Technicians using automated systems will find computer skills valuable.

A few ophthalmic laboratory technicians learn their trade in the armed forces or in the few programs in optical technology offered by vocational-technical institutes or trade schools. In 2015, there were four programs in ophthalmic technology accredited by the Commission Opticianry Accreditation (COA).

Other Qualifications

Ophthalmic laboratory technicians need a high degree of manual dexterity, good vision, and the ability to recognize very fine color shadings and variations in shape. An artistic aptitude for detailed and precise work also is important.

Certification and Advancement

In large ophthalmic laboratories, technicians may become supervisors or managers. Some become dispensing opticians, although further education or training generally is required in that occupation.

Employment Trends

Overall, faster-than-average growth is expected for employment of ophthalmic laboratory technicians, but varies by detailed occupation. Job opportunities should be favorable because few people seek these positions.

Employment Change

Ophthalmic laboratory technicians are expected to experience employment growth of 10%, faster than the average for all occupations. Demographic trends make it likely that many more Americans will need vision care in the years ahead. Not only will the population grow, but also the proportion of middle-aged and older adults is projected to increase rapidly. Middle age is a time when many people use corrective lenses for the first time, and elderly persons usually require more vision care than others. The increasing use of automated machinery, however, will temper job growth for ophthalmic laboratory technicians.

Job Prospects

Job opportunities for ophthalmic laboratory technicians should be favorable, due to expected faster-than-average growth. Those with formal training in an ophthalmic laboratory technology program will have the best job prospects. In addition to openings from job growth, many job openings also will arise from the need to replace technicians who transfer to other occupations or who leave the labor force. TABLE 15.5 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual earnings of wage and salary ophthalmic laboratory technicians were $35,230 in May 2014. The middle 50% earned between $28,980 and $42,820. The lowest 10% earned less than $24,350, and the highest 10% earned more than $50,540. The annual mean wage was $48,610 in medical equipment and supplies manufacturing, $42,990 in outpatient care centers, and $46,990 in medical and surgical hospitals, the three industries that employ the most ophthalmic laboratory technicians.

Related Occupations

Ophthalmic laboratory technicians manufacture and work with the same devices that are used by dispensing opticians, orthotists, prosthetists, and medical and ophthalmic laboratory technicians. Other occupations that work with or manufacture goods using similar tools and skills are precision instrument and equipment repair, and textile, apparel, and furnishings occupations.

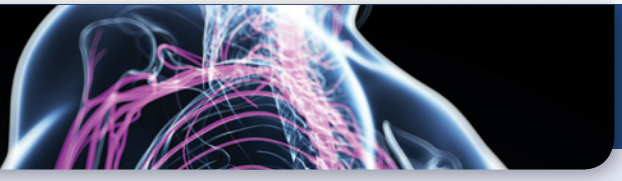
Additional Information

For information on an accredited programs in ophthalmic laboratory technology, contact:

- Commission on Opticianry Accreditation, P. O. Box 592, Canton, NY 13617. Internet: http://www.coaccreditation.com/

TABLE 15.5 Projection Data for Ophthalmic Laboratory Technicians, 2014–2024

			Change, 2014–2024	
Occupational Title	Employment, 2014	Projected Employment, 2024	Number	Percentage
Ophthalmic laboratory technicians	30,200	33,200	3,000	10%



LEARNING PORTFOLIO

Issues for Discussion

1. Many schools offer vision screenings to their students as a way to identify previously undetected vision problems. By contrast, comprehensive eye exams fully evaluate eye health and vision. Review the content found in the American Optometry Association website on this subject, http://www.aoa.org/patients-and-public/caring-for-your-vision/comprehensive-eye-and-vision-examination/limitations-of-vision-screening-programs?sso=y, and discuss the differences and similarities between a vision screening and a comprehensive eye exam.
2. In your opinion, what is the most important responsibility of an optometrist? Explain why you feel this is most important.
3. Many individuals needing to correct vision acuity problems must decide between contact lenses and eyeglasses. Review the content found in the following website, http://www.allaboutvision.com/contacts/faq/contacts-vs-glasses.htm, which discusses the pros and cons of contact lenses and eyeglasses. If money was not an issue, decide whether you would want contact lenses or eyeglasses.
4. Lasik surgery is used to correct vision in people so that they no longer need to wear eyeglasses or contact lenses. More information about Lasik surgery can be found at this website: http://www.webmd.com/eye-health/lasik-laser-eye-surgery. Do you think Lasik technology is a good thing for the optometry field? Why or why not?

Enrichment Activities

1. Lions Club International sponsors collection drives to recycle eyeglasses and send them to those in need in developing countries. Visit the Lions Club website on this subject, http://members.lionsclubs.org/EN/serve/sight/recycle-eyeglasses/index.php. On your own or as part of a team of students, set up an eyeglass recycling program at your school. Report on the success of your program to your instructor and class.
2. Write a short skit that documents a professional interaction between an optometrist and another person. The other person can be a client or another employee. Use the skit to document your knowledge about some aspect of this profession.
3. Read the blog entitled *Optometry: An Inspired Career Choice* at http://blog.opted.org/. Discuss with your instructor and classmates whether the content of the blog is helpful to someone deciding on a career as an optometrist.

References

1. Council on Optometric Education of the American Optometric Association. *Accredited Professional Optometric Degree Programs*. Internet: http://www.aoa.org/Documents/students/od_program_directory_08_04_2015.pdf
2. Association of Schools and College of Optometry. *Optometry Admission Test*. Internet: http://www.ada.org/en/oat
3. Commission on Opticianry Accreditation. *Degree Programs*. Internet: http://www.coaccreditation.com/programs.shtml

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CHAPTER 16

Communication Impairment Professionals*

Key Terms

American Speech-Language-Hearing Association (ASHA)
Audiologists
Board Certified Specialist - Audiology (BCS-a)
Board Certified Specialist - Child Language and Language Disorders (BCS-CL)
Board Certified Specialist - Fluency (BCS-F)
Board Certified Specialist - Interoperative Monitoring (BCS-IOM)
Board Certified Specialist - Swallowlng and Swallowing Disorders (BCS-S)
Certificate of Clinical Competence in Audiology (CCC-a)
Certificate of Clinical Competence in Speech-Language Pathology (CCC-SPL)
Cochlear Implant Specialty Certification® (CISC®)
Communication disorders
Doctor of Audiology (AuD)
Grammatical patterns
Hearing aid dispenser
Hearing impairments
Language disorder
Pediatric Audiology Specialty Certification® (PASC®)
Ménière's disease
Speech disorder
Speech-language pathologist (SLP)
Telepractice
Tinnitus
Vertigo

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

SPEECH, LANGUAGE, AND HEARING IMPAIRMENTS: AN OVERVIEW

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 difficulty in producing speech sounds, controlling voice production, and maintaining speech rhythm. Individuals with speech and language 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. Speech-language pathologists are trained to treat individuals with a variety of speech and language disorders.

Hearing impairment can take many forms. It can be an (1) inability to hear speech and other sounds clearly, even though the sounds are sufficiently loud; (2) inability to understand and use speech in communication, although speech is sufficiently loud and can be heard clearly; or (3) inability to hear speech and other sounds loudly enough, which is considered a loss of hearing sensitivity. A person can experience 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 social, emotional, and educational isolation and untreated hearing loss in infants interferes with normal development.

Over 95% of newborn infants are screened for hearing loss (FIGURE 16.1); however, of those infants identified as having permanent hearing loss, one-third do not receive appropriate follow-up or intervention.

Infants identified as having a hearing impairment are referred to an audiologist, who does further testing of infants to determine the appropriate treatment. Intervention may include hearing aids or a surgically placed cochlear implant. Hearing aids make sounds louder, whereas cochlear implants send sound signals directly to the hearing nerve.[1] A team of healthcare professionals work with the child and family during both diagnosis and treatment. These include a pediatric otolaryngologist, audiologist, speech pathologist, child life specialist, geneticist, developmental pediatrician, and psychologist.

Causes of a hearing loss are viral infections, head injuries, birth defects, exposure to excessively loud noises, drugs, tumors, heredity, and the aging process. In adults, balance disorders can be caused by various problems in the inner ear and are a reason for falls in older adults. An example is **Ménière's disease**, associated with hearing loss and **tinnitus** as well as **vertigo**.[2]

Hearing impairment is the disorder most frequently reported to physicians. Less than 1% of Americans younger

FIGURE 16.1 Newborn infants are screened for hearing impairments.
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than 20 years of age have a hearing disability. However, close to 10% of those between 65 and 74 years of age and 23% of those 75 years and older have hearing loss.[3] Since the cost of hearing aids is not covered by Medicare and because hearing aids are quite expensive, many older adults do not purchase hearing aids and suffer from the effects of hearing loss, which often include isolation and depression.

Speech-language pathologists and audiologists often work together with clients who have disorders in either speech or hearing, since a loss of hearing is most often a cause for speech and language disorders.

SPEECH-LANGUAGE PATHOLOGISTS

Significant Points

- A master's degree in speech-language pathology is the standard educational requirement; almost all states regulate these workers, and licensing requirements vary.
- In 2014, about 44% worked in educational services and 19% worked in offices of other healthcare practitioners; others worked in hospitals and long-term care.
- Favorable job opportunities are expected especially in elementary and secondary schools.

Work Description

Speech-language pathologists (SLPs), sometimes called speech therapists, assess, diagnose, treat, and help prevent disorders related to speech, language, cognitive communication, voice, swallowing, and fluency.

SLPs work with people who cannot produce speech sounds or cannot produce them clearly; those with speech rhythm and fluency problems, such as stuttering; people with voice disorders, such as inappropriate pitch or harsh voice; those with problems understanding and producing language; those who wish to improve their communication skills by modifying an accent; and those with cognitive communication impairments, such as attention, memory, and problem-solving disorders. They also work with people who have swallowing difficulties.

Speech, language, and swallowing difficulties can result from a variety of causes, including stroke, brain injury, hearing loss, developmental delay, learning disabilities, cerebral palsy, cleft palate, voice pathology, or emotional problems. Problems can be congenital, developmental, or acquired. Speech-language pathologists use special instruments and qualitative and quantitative assessment methods, including standardized tests, to analyze and diagnose the nature and extent of impairments.

SLPs evaluate the extent of communication problems in individuals by having a patient complete basic reading and vocalizing tasks or completing standardized tests. The SLP then develops an individualized plan of care tailored to each patient's needs. For individuals with little or no speech capability, speech-language pathologists may select augmentative or alternative communication methods, including automated devices and sign language, and teach their use. They teach patients how to make sounds, improve their voices, or increase their oral or written language skills to communicate more effectively. They also teach individuals how to strengthen muscles or use compensatory strategies to swallow without choking or inhaling food or liquid. SLPs help patients develop or recover reliable communication and swallowing skills so patients can fulfill their educational, vocational, and social roles (**FIGURE 16.2**).

SLPs keep records on the initial evaluation, progress, changes in the client's condition or treatment plans, and final

FIGURE 16.2 Speech-language pathologists (SLPs) assess, diagnose, and treat children with disorders of language development.

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evaluation on discharge of clients. This helps pinpoint problems, tracks client progress, and justifies the cost of treatment when applying for reimbursement. They counsel individuals and their families concerning **communication disorders** and how to cope with the stress and misunderstanding that often accompany these disorders. They also work with family members to recognize and change behavior patterns that impede communication and treatment, and demonstrate communication-enhancing techniques to use at home.

Most speech-language pathologists provide direct clinical services to individuals with communication or swallowing disorders. In medical facilities, they may perform their job in conjunction with physicians, social workers, psychologists, dietitians, and other therapists. Speech-language pathologists in schools collaborate with teachers from preschool through high school, special educators, interpreters, other school personnel, and parents to develop and implement individual or group programs, provide counseling, and support classroom activities. Some speech-language pathologists specialize in working with specific age groups, such as children or older adults. Others focus on treatment programs for specific communication or swallowing problems, such as those resulting from strokes or cleft palate.

Some SLPs conduct research on how people communicate. Others design and develop equipment or techniques for diagnosing and treating speech problems.

Work Environment

In medical facilities, SLPs work with physicians and surgeons, social workers, audiologists, psychologists, and other healthcare workers. In schools, they work with teachers, other school personnel, and parents to develop and carry out individual or group programs, provide counseling, and support classroom activities.

Speech-language pathologists usually work at a desk or table in clean, comfortable surroundings. In medical settings, they may work at the patient's bedside and assist in positioning the patient. In schools, they may work with students in an office or classroom. Some work in clients' homes.

Although the work is not physically demanding, it requires attention to detail and intense concentration. The emotional needs of clients and their families may be demanding. Most full-time SLPs work 40 hours per week. About 25% of speech-language pathologists worked part time in 2014. Those who work on a contract basis may spend a substantial amount of time traveling between facilities.

Employment Opportunities

Speech-language pathologists held about 135,400 jobs in 2014, and about half were employed in educational services (FIGURE 16.3).

Others were employed in hospitals, offices of other health practitioners, and nursing care and assisted-living facilities. SPLs provide services to all ages—from premature infants in neonatal intensive care units, to veterans that have experienced a brain injury in a military hospital, to an elderly resident in an assisted-living facility. Speech therapy can also be provided through **telepractice**, the use of telecommunication technology to deliver professional services at a distance by linking a clinician to a client for assessment, intervention, and/or consultation.[4]

FIGURE 16.3 The majority of speech-language pathologists work in schools.
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Some speech-language pathologists are self employed and contract to provide services in schools, physicians' offices, hospitals, or nursing care facilities, or work as consultants to industry (TABLE 16.1).

Educational and Legal Requirements

A master's degree is the most common level of education among speech-language pathologists. Licensure or certification requirements also exist, but vary by state.

TABLE 16.1 Distribution of Speech-Language Pathologists by Industry, 2014

Industry	Percentage
Educational services	44%
Offices of health practitioners	19%
Hospitals	13%
Nursing and residential care facilities	5%
Social assistance	4%

Education and Training

Most speech-language pathologist jobs require a master's degree. The Council on Academic Accreditation is an entity of the **American Speech-Language-Hearing Association (ASHA)**; it accredits postsecondary academic programs in speech-language pathology. In 2015, there were 247 graduate programs in speech-language pathology accredited by the Council on Academic Accreditation.[5] Although master's programs do not specify a particular undergraduate degree for admission, certain courses must be taken before entering the program. Required courses vary by institution. Undergraduate courses in biology, physiology and anatomy, medical terminology, and communication are desirable. Typical graduate courses are statistics, physics, chemistry, human anatomy and physiology, neuroanatomy and neurophysiology, and human genetics; courses in social/behavioral sciences may include psychology, sociology, anthropology, and public health. Graduate students may also learn the nature of speech, language and swallowing disorders, principles of acoustics, and psychological aspects of communication. During the supervised clinical practicum and fellowship, students learn to evaluate and treat speech, language, and swallowing disorders.

Licensure

Typical licensing requirements are a master's degree from an accredited college or university, supervised clinical experience, and successful completion of the Praxis Examination in Speech-Language Pathology. Most states that require licensure for clinical practice or teacher credentialing, require successful completion of the Praxis exam. Most 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. For specific regulation and eligibility requirements, contact your state's regulatory board.

State regulation of SLPs may differ for pathologists practicing in schools. For information on the state regulation of speech-language pathologists in public schools contact your state's Department of Education.

Certification and Other Qualifications

The **Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP)** credential offered by the ASHA is a voluntary credential; however, the CCC-SLP meets some or all of the requirements for licensure in some states and may be required by some employers.

To earn a CCC, a person must have a graduate degree from an accredited university, which typically includes a supervised clinical practicum; complete a 36-week, full-time postgraduate clinical fellowship; and pass the Praxis Series examination in Speech-Language Pathology administered by the Educational Testing Service. Maintaining certification requires 30 professional development hours over a three-year period.[6] Speech-language pathologists with CCC-SLP certification can apply for additional specialty certification as a **Board Certified Specialist (BCS)** in **Child Language and Language Disorders (BCS-CL)**, **Fluency (BCS-F)**, or in **Swallowing and Swallowing Disorders (BCS-S)**.[7] More details about specialty certification are available under *Additional Information* at the end of the chapter.

Desirable qualities of SLPs are to be able to effectively communicate diagnostic test results, diagnoses, and proposed treatment in a manner easily understood by clients and their families. They must be able to approach problems objectively and be supportive of clients and their families. SLPs must have critical-thinking skills and be detail oriented in order to recognize small changes in articulation and voice quality, and to modify treatment plans as needed to achieve treatment goals. Because a patient's progress may be slow, patience, compassion, and good listening skills are necessary.

Advancement

As SLPs gain clinical experience and engage in continuing professional education, many develop expertise with certain populations, such as preschoolers and adolescents, or disorders, such as aphasia and learning disabilities. Board recognition in a specialty area, such as child language, fluency, or feeding and swallowing, can increase the number of referrals for those in private practice. Experienced clinicians may become mentors or supervisors of other therapists or be promoted to administrative positions.

Employment Trends

Faster-than-average employment growth is projected. Job opportunities are expected to be favorable.

Employment Change

Employment of speech-language pathologists is expected to grow by 21% from 2014 to 2024, faster than the average for all occupations. As the members of the baby-boom generation continue to age, the possibility of neurological disorders and associated speech, language, and swallowing impairments increases. Medical advances also are improving the survival rate of premature infants and trauma and stroke victims, who then need assessment and sometimes treatment. Technological advances in cochlear implants for infants with impaired hearing require the services of both an audiologist and speech therapist to develop language skills after the implant is placed.

Increased awareness of speech and language disorders, such as stuttering, in younger children should also lead to a need for more speech-language pathologists who specialize in treating that age group. In addition, medical advances are improving the survival rate of premature infants and victims of trauma and strokes, many of whom need help from speech-language pathologists.

TABLE 16.2 Projection Data for Speech-Language Pathologists, 2014–2024

			Change, 2014–2024	
Occupational Title	Employment, 2014	Projected Employment, 2024	Number	Percentage
Speech-language pathologists	135,400	164,300	28,900	21%

Employment in educational services will increase with the growth in elementary and secondary school enrollments, including enrollment of special education students. The 2004 Individuals with Disabilities Education Act (IDEA) is a federal law that guarantees special education and related services to all eligible children with disabilities. Greater awareness of the importance of the early identification and diagnosis of speech and language disorders in young children will also increase employment.

In healthcare facilities, restrictions on reimbursement for therapy services may limit the growth of speech-language pathologist jobs in the near term. However, the long-run demand for therapists should continue to rise as growth in the number of individuals with disabilities or limited function spurs demand for therapy services.

The number of speech-language pathologists in private practice should increase because hospitals, schools, and nursing care facilities will contain costs by increasingly contracting out for these services.

Job Prospects

In addition to job growth, a number of job openings in speech-language pathology will be a result of retirements. Opportunities should be favorable, particularly for those with the ability to speak a second language, such as Spanish. Demand for SPLs can be regional, so job prospects are expected to be favorable for those who are willing to relocate, particularly to areas experiencing difficulty in attracting and hiring speech-language pathologists, especially in medically underserved areas such as urban centers and rural communities. Schools often have openings for speech pathologists especially in the Mountain and Pacific states.[8] TABLE 16.2 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual wages of speech-language pathologists were $71,550 in May 2014. Mean annual wages in the industries employing the largest numbers of speech-language pathologists in 2014 are shown in TABLE 16.3.

Related Occupations

Speech-language pathologists specialize in the prevention, diagnosis, and treatment of speech and language problems. Workers who treat other physical and mental health problems include audiologists, occupational therapists, physical therapists, psychologists, and recreational therapists.

AUDIOLOGISTS

Significant Points

- A doctoral degree in audiology (hearing) is the standard level of required education.
- In 2014, about two-thirds worked in healthcare facilities; others were employed by educational services and health and personal care stores.
- All states regulate licensure of audiologists; requirements vary by state.

Work Description

Audiologists work with people who have hearing, balance, and related ear problems. They examine individuals of all ages and identify those with the symptoms of hearing loss and other auditory, balance, and related sensory and neural problems. They then assess the nature and extent of the problems and help the individuals manage them. Using audiometers, computers, and other testing devices, they measure the loudness at which a person begins to hear sounds, the ability to distinguish between sounds, and the impact of hearing loss on daily life. In addition, audiologists use computer equipment to evaluate and diagnose balance disorders. Audiologists interpret these results and may coordinate results with medical, educational, and psychological information to make a diagnosis to determine a course of treatment.

TABLE 16.3 Mean Annual Wages in the Industries Employing the Largest Numbers of Speech-Language Pathologists in 2014

Nursing care facilities	$89,330
Office of health professionals	$80,920
Hospitals	$79,050
Educational services	$66,910

Data from: Bureau of Labor Statistics. U.S. Department of Labor. *Occupational Employment and Wages* – May 2014. Internet: http://www.bls.gov/oes/#data/

Hearing disorders can result from a variety of causes including trauma at birth, viral infections, genetic disorders, exposure to loud noise, certain medications, or aging (FIGURE 16.4).

Treatment may include examining and cleaning the ear canal, fitting and dispensing hearing aids, and fitting and programming cochlear implants. Treatment also includes counseling on adjusting to hearing loss, training on the use of hearing devices, and teaching communication strategies for use in a variety of environments. For example, they may provide instruction in listening strategies. Audiologists also may recommend, fit, and dispense personal or large-area amplification systems and alerting devices.

In audiology clinics, audiologists may independently develop and carry out treatment programs. They keep records on the initial evaluation, progress, and discharge of patients. In other settings, audiologists may work with other health and education providers as part of a team in planning and implementing services for children and adults. Audiologists who diagnose and treat balance disorders often work in collaboration with physicians as well as physical and occupational therapists.

Some audiologists specialize in work with older adults, children, or hearing-impaired individuals who need special treatment programs. Others develop and implement ways to protect workers' hearing from on-the-job injuries. They measure noise levels in workplaces and conduct hearing protection programs in factories and in schools and communities.

Audiologists hold jobs in the military and public health settings and for the hearing device manufacturing industry. In addition, audiologists make recommendations to protect hearing for workers in the military, the music industry—especially performers exposed to loud music—and those exposed to loud noises in industries such as mining, construction, and other industrial settings. Some audiologists 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 (FIGURE 16.5).

FIGURE 16.4 Audiologist examining the ear canal of an elderly client.
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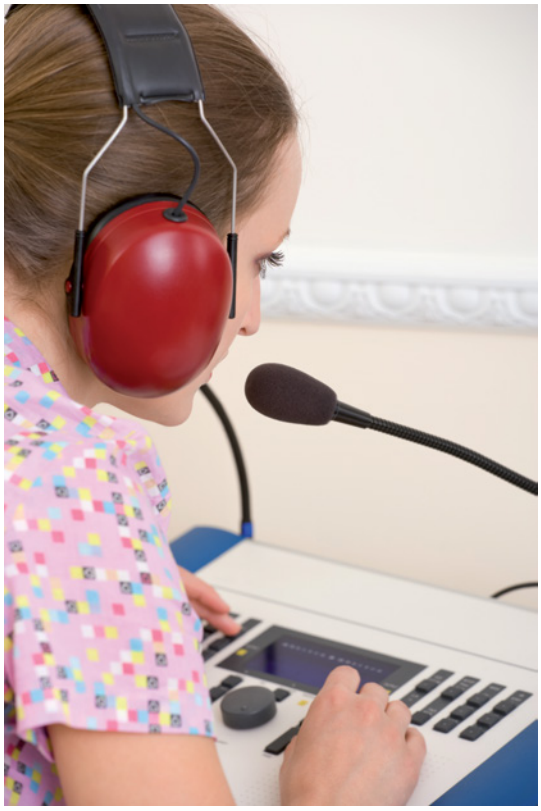

FIGURE 16.5 Audiologists conduct hearing protection programs in work settings with excessive noise.
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Work Environment

Most audiologists work in healthcare facilities, such as hospitals, physicians' offices, and audiology clinics, and some have a private practice or work as consultants to such facilities. Others work in schools or school districts and travel between facilities, and some have a private practice. Audiologists work closely with registered nurses, audiology assistants, speech-language pathologists, and other healthcare professionals.

Most audiologists work full time. Some work weekends and evenings to meet patients' needs. Those who work on a contract basis may spend a lot of time traveling between facilities. For example, an audiologist who is contracted by a school system may have to travel between different schools to provide services.

Audiologists usually work at a desk or table in clean, comfortable surroundings. The job is not physically demanding but does require attention to detail and intense concentration. The emotional needs of patients and their families can be demanding. Most full-time audiologists work about 40 hours per week.

Audiologists who work in private practice also manage the business aspects of running an office, such as developing a patient base, hiring employees, keeping records, and ordering equipment and supplies.

Employment Opportunities

Audiologists held about 13,200 jobs in 2014. About two-thirds of all jobs were in healthcare facilities—physicians' offices or other health practitioners, including other audiologists, and in hospitals and outpatient care centers. About 10% of jobs were in educational services (TABLE 16.4).

Educational and Legal Requirements

All states regulate the licensure of audiologists; requirements vary by state. A **Doctor of Audiology (AuD)** from a program accredited by the Council on Academic Accreditation is the requirement for licensure for entry-level audiologists. A bachelor's degree in any field is needed to enter one of these programs.

Education and Training

Individuals pursuing a career will need to earn a doctoral degree. The doctoral degree in audiology is a graduate program typically lasting four years and resulting in the AuD designation. The Council on Academic Accreditation (CAA) is an entity of the ASHA that accredits education programs in audiology. In 2015, the CAA accredited 73 doctoral programs in audiology.[5]

Requirements for admission to programs in audiology include courses in English, mathematics, physics, chemistry, biology, psychology, and communication. Graduate coursework in audiology includes anatomy; physiology; physics; genetics; normal and abnormal communication development; auditory, balance, and neural systems assessment and treatment; diagnosis and treatment; pharmacology; and ethics. Graduate curriculums also include supervised clinical practicum and externships.

TABLE 16.4 Employment of Audiologists by Industry, 2014

Industry	Percentage
Offices of other health professionals	25%
Offices of physicians	25%
Hospitals	14%
Educational services	12%
Health and personal care services	11%

Licensure

Audiologists are regulated by licensure in all 50 states. Although some states may accept a master's degree in audiology for licensure, graduate programs have transitioned to a doctoral degree (AuD), so those considering a career in audiology will be required to complete a doctorate. Some states regulate the practice of audiology and the dispensing of hearing aids separately, meaning some states will require an additional license as a **hearing aid dispenser**. Many states require that audiologists complete continuing education for license renewal. Eligibility requirements, hearing aid dispensing requirements, and continuing education requirements vary from state to state. Some audiologists become licensed to dispense hearing aids; however, hearing aid dispensers can be licensed to fit hearing aids without training as an audiologist. For specific requirements, contact your state's medical or health board. The ASHA lists licensure requirements for audiologists and for hearing aid dispensing.[6]

Certification and Other Requirements

Audiologists can earn the **Certificate of Clinical Competence in Audiology (CCC-A)** offered by the ASHA. Since 2012, a doctoral degree is required for applicants for the CCC-A credential.[9] Audiologists with CCC-A certification can apply to become a **Board Certified Specialist in Inoperative Monitoring (BCS-IOM)** from the American Audiology Board of Intraoperative Monitoring.[10] In addition, audiologists can apply for certification from the American Board of Audiology: **Board Certified Specialist in Audiology®**, **Cochlear Implant Specialty Certification® (CISC®)**, and **Pediatric Audiology Specialty Certification® (PASC®)**. The CISC was developed to standardize training and knowledge of CISC audiologists and recognize those professionals who have acquired specialized knowledge in the field of cochlear implants, including expectations, surgical considerations, device operation, and rehabilitation. The PASC signifies expertise in pediatric audiology and demonstrates to colleagues, other healthcare providers, patients, and employers that he or she has acquired a high level of knowledge in the field of pediatric audiology and is the best option for treating children with audiovestibular disorders and hearing loss. Board certification can improve career opportunities and advancement.[11] Professional credentialing may satisfy some or all of the requirements for state licensure.

Desirable characteristics for students interested in becoming an audiologist are the ability to effectively communicate diagnostic test results, diagnoses, and proposed treatments in a manner easily understood by their patients. They must be able to approach problems objectively and provide emotional support to patients and their families. Critical-thinking and problem-solving skills are necessary to be able to analyze the cause of hearing loss or balance problems and develop appropriate treatment to address these problems. Because a patient's progress may be slow, patience, compassion, and good listening skills are necessary.

TABLE 16.5 Projection Data for Audiologists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Audiologists	13,200	16,900	3,800	29%

It is important for audiologists to be aware of new diagnostic and treatment technologies. Most audiologists participate in continuing education courses to learn new methods and technologies. In addition, many audiologists conduct research or participate in research to evaluate methods for evaluating and treating hearing loss.

Advancement

With experience, audiologists can advance to open their own private practice. Audiologists working in hospitals and clinics can advance to management or supervisory positions.

Employment Trends

Employment growth is expected to be faster than average; however, because of the small size of the occupation, only about 3,800 new jobs are projected through 2024. Job prospects will be favorable for those possessing the AuD degree.

Employment Change

Employment of audiologists is expected to grow 29% from 2012 to 2024, much faster than the average for all occupations. Hearing loss is strongly associated with aging, so the increased growth of older population groups will cause the number of people with hearing and balance impairments to increase markedly.

Medical advances also are improving the survival rate of premature infants and trauma victims, who then need assessment and sometimes treatment for hearing loss. Greater awareness of the importance of the early identification and diagnosis of hearing disorders in infants also will increase employment. In addition to medical advances, technological advances in hearing aids may drive demand. Digital hearing aids have become smaller in size and also have quality-improving technologies like reducing feedback. Demand may be spurred by those who switch from analog to digital hearing aids, as well as those who will desire new or first-time hearing aids because they are becoming less visible and can be worn for long periods of time because of placement within the ear canal.

Employment in educational services will increase along with growth in elementary and secondary school enrollments, including the enrollment of special education students. Growth in the employment of audiologists will be moderated by limitations on reimbursements made by third-party payers for the tests and services they provide.

Job Prospects

Job prospects will be favorable for audiologists because of the retirement of baby boomers. Only a few job openings for audiologists will arise from the need to replace those who leave the occupation, because the occupation is relatively small and workers tend to stay in this occupation until they retire. Demand may be greater in areas with large numbers of retirees, so audiologists who are willing to relocate may have the best job prospects. Greater awareness of the importance of early identification and diagnosis of hearing disorders in infants will increase employment. The number of audiologists in private practice will rise due to the increasing demand for direct services to individuals, as well as increasing use of contract services by hospitals, schools, and nursing care facilities. Even though Medicare doesn't cover the cost of hearing aids, active older adults with adequate financial resources are likely to seek services of audiologists to be fitted for hearing aids in order to maintain an active lifestyle. **TABLE 16.5** shows some projection data from the U.S. Department of Labor.

Earnings

Median annual wages of audiologists were $73,060 in May 2014. Salaries for audiologists working in different settings are shown in **TABLE 16.6**.

TABLE 16.6 Mean Annual Wages in the Industries Employing the Largest Numbers of Audiologists, 2014

Hospitals	$78,070
Offices of other health professionals	$73,350
Offices of physicians	$72,100
Educational services	$70,840
Health and personal care stores	$69,670

Data from: Bureau of Labor Statistics. U.S. Department of Labor. *Occupational Employment and Wages* – May 2014. Internet: http://www.bls.gov/oes/#data/

Professional Profiles

Name: Jasmine
Title: Audiology Assistant
Education: BS in Communication Disorders

Q: Describe your job and organization.

A: I work as an Audiology Assistant in a children's hospital in an urban setting. I assist with a range of clinical services for pediatric patients with a variety of hearing problems. I conduct universal newborn hearing screening and assist the audiologist in behavioral hearing tests. I also perform electroacoustic analysis of hearing aids and other amplification devices.

Q: Describe a typical work day.

A: At the beginning of the day, I check the function of the equipment and set up the testing booths. About 80% of my day, I provide direct patient care doing newborn hearing screening and assisting with behavior hearing tests. The rest of the day I troubleshoot problems and repair hearing aids and amplification devices. I also communicate with manufacturers and suppliers regarding the status of orders or repairs.

Q: Why did you choose this profession?

A: I chose this profession because it is related to my undergraduate degree in communication disorders. I like the direct patient contact with children, since each child is different, which offers new learning experiences.

Q: What challenges you most about this profession?

A: Each child is very different, which is difficult, since my job is to understand what each child needs in order to successfully complete an accurate hearing test.

Q: Name and explain what part of your academic training most prepared you for this profession.

A: There was no academic training required for this position; however, a two-week training through the hospital was required. The audiology courses that I completed for my undergraduate degree prepared me for this position and gave me background knowledge about hearing loss and the anatomy of the hearing mechanisms.

Q: Did you face obstacles in pursuing your goals? If so, describe them and how you overcame them.

A: An obstacle that I faced was allowing money to be a driving force of choosing a career in the health field. I overcame the obstacle by realizing that I get satisfaction from going to work and helping children every day.

Q: What do you wish you had known in high school or college about pursuing this career?

A: I wish I would have known that a doctorate degree is required to reach the next level of advancement in audiology.

Q: What advice would you give someone who is considering this career?

A: The advice that I would give someone considering this career is that having a passion and love for children is important. People skills are essential for being effective in this career in order to relate to the patients and their caregivers.

Q: What personal characteristics are needed for this work?

A: People skills are essential for being effective in this career in order to relate to the patients and their caregivers. Personality characteristics important for this work are compassion, enthusiasm, and motivation.

Related Occupations

Audiologists specialize in the prevention, diagnosis, and treatment of hearing problems. Workers who treat other problems related to physical or mental health include optometrists, physical therapists, psychologists, physicians and surgeons, and speech-language pathologists.

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. For information on the specific requirements of your state, contact that state's licensing board.

Career information, a description of the CCC-A credential, and information on state licensure for speech-language pathologists and audiologists is available from:

- American Speech-Language-Hearing Association (ASHA), 2200 Research Blvd., Rockville, MD 20850. Internet: http://www.asha.org

For information on specialty certification for speech-language pathologists, contact:

- American Board of Child Language and Language Disorders, 563 Carter Court, Suite B, Kimberly, WI 54136. Internet: http://www.childlanguagespecialist.org/
- American Board of Fluency and Fluency Disorders, 563 Carter Court, Kimberly, WI 54136, Internet: http://www.stutteringspecialists.org/?page=becoming_bcsf
- American Board of Swallowing and Swallowing Disorders, 563 Carter Court, Kimberly, WI 54136. Internet: http://www.swallowingdisorders.org/?page=apply

For information on accredited AuD programs, contact:

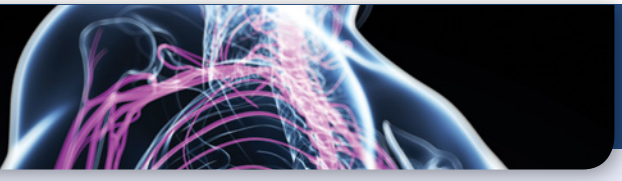
- American Academy of Audiology, 11480 Commerce Park Drive, Suite 220, Reston, VA 20191. Internet: http://www.audiology.org/contact-us

For information on specialty certification for audiologists, contact:

- American Board of Audiology, 11480 Commerce Park Drive, Suite 200, Reston, VA 20191. Internet: http://www.boardofaudiology.org/
- American Audiology Board of Intraoperative Monitoring, 563 Carter Court, Kimberly, WI 54136. Internet: http://www.aabiom.com/

For more information on the career of audiology, contact:

- Audiology Foundation of America, 8 N. 3rd St., Suite 301, Lafayette, IN 47901. Internet: http://www.audfound.org



LEARNING PORTFOLIO

Issues for Discussion

1. View videos of audiologists and speech pathologists describing their work. Based on the videos, describe some of the tasks of the professionals and where they work. Describe the educational or health problem of clients in each video.
   - View the two-minute video, *Speech-Language Pathologists Make a Difference: Mackenzie Fama*. Internet: https://youtu.be/FNiGjmqweLo
   - View the one-minute video, *Audiologists Changing Lives. Dr. Julie Martinez Verhoff*. Internet: http://www.asha.org/Careers/Julie-Martinez-Verhoff/
   - View the two-minute video. *Audiologists Changing Lives: Dr. Chizuko Tamaki, AuD, PhD, CCC-A*. Internet: http://www.asha.org/Careers/Chizuko-Tamaki/
   - View the two-minute video, *Speech-Language Pathologists Make a Difference: Davetrina Seles Gadson*. Internet: http://www.asha.org/Careers/Davetrina-Gadson/
2. View the six-minute video, *Telepractice*, to learn how a speech pathologist delivers services using the Internet. Describe the two settings shown in the video. Describe the benefits of telepractice for both the speech pathologist and the client (Internet: http://www.asha.org/PRPSpecificTopic.aspx?folderid=-8589934956&section=Overview).

Enrichment Activities

1. Review an article written by a speech pathologist specializing in adult neurological disorders with dysphagia. The author reflects on her experiences as a patient with a brain tumor. (McCoy Y. The Other Side of the Spoon. *The ASHA Leader*, October 2015, 20:80. doi:10.1044/leader.FPLP.20102015.80 Internet: http://leader.pubs.asha.org/article.aspx?articleid=2449227).
2. Archambault Besson N. The Tongue Was Involved but What Was the Trouble? *The ASHA Leader*. September 2015, 20 (9): doi:10.1044/leader.CP.20092015.np. Review the speech pathologist's discussion of a client who was a preschool child with a tongue-tie who demonstrated behavioral problems including being a picky eater and unclear speech patterns.
3. Read the article, "Remarkable Woman: Dana Suskind," *Chicago Tribune*, February 10, 2013. Dr. Suskind is a pediatric surgeon with a primary practice of cochlear implants for children born without the ability to hear. What is involved in teaching a child language skills after a cochlear implant? (Internet: http://articles.chicagotribune.com/2013-02-10/features/ct-tribu-remarkable-suskind-20130210_1_cochlear-implant-social-science/2)
4. Review the documentary video, *Swallow: A Documentary – Dysphagia*, from the patient and patient's family point of view for those with swallowing difficulties. (Internet: https://www.youtube.com/watch?v=MrbE-UDO6S5U)

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CHAPTER 17

Physical Therapy, Orthotists, and Prosthetists*

Key Terms

Assistive devices
Deep tissue massage
Electrical stimulation
Evidence-based practice
Orthotic and prosthetic technician
Orthotics and prosthetics (O&P)
Orthotist
Outcomes assessment
Paraffin baths
Pedorthists
Photosensitivity
Physical therapist
Physical therapist aides
Physical therapist assistants
Physical therapy
Prosthetist
Rehabilitation
Research
Soft tissue mobilization
Sports medicine
Tests and measurements
Therapeutic exercise

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

PHYSICAL THERAPY AND OUR HEALTH

Physical therapy is a health profession in which the primary purpose is the promotion of optimal human health and functioning 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 lower-back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy. Other professional activities in which physical therapists engage are **research**, education, consultation, and administration.

PHYSICAL THERAPISTS

Significant Points

- Employment is projected to grow much faster than average and job opportunities should be good, especially for therapists treating older adults.
- Physical therapists must possess a post-baccalaureate degree from an accredited program to work in this field.
- Physical therapists are regulated in all 50 states; requirements vary by state.
- Most jobs are in offices of other health practitioners and in hospitals.

Work Description

Physical therapists provide services that help restore function, improve mobility, relieve pain, and prevent or limit permanent physical disabilities. They restore, maintain, and promote overall fitness and health. Their patients include accident victims and individuals with disabling conditions such as lower-back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy.

Therapists examine patients' medical histories and then use **tests and measurements** to evaluate and measure the patients' strength, range of motion, balance and coordination, posture, muscle performance, respiration, and motor function. Specific tests may 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. Next, physical therapists develop plans describing a treatment strategy and its anticipated outcome.

Treatment often includes exercise, especially for patients who have been immobilized or who lack flexibility, strength, or endurance. Physical therapists encourage patients to use their muscles to increase their flexibility and range of motion. More advanced exercises focus on improving strength, balance, coordination, and endurance. The goal is to improve how an individual functions at work and at home.

Physical therapists also use **electrical stimulation**, hot packs or cold compresses, and ultrasound to relieve pain and reduce swelling. They may use traction or **deep tissue massage** to relieve pain and improve circulation and flexibility. Therapists also teach patients to use **assistive devices**, such as crutches, prostheses, and wheelchairs. They demonstrate **therapeutic exercises**, perform **soft tissue mobilization**, neuromuscular reeducation, bronchopulmonary hygiene, and ambulation or gait training. An example of an assistive device is seen in FIGURE 17.1. They also may show patients how to do exercises at home to expedite their recovery. As treatment continues, they continue to evaluate their patients progress and make modifications based upon observations and patient reports. They may institute new treatments as necessary. They communicate with patients and their families about what to expect from therapy and how to cope with the recovery process. Physical therapists document the patient's progress on a regular basis. With the increased use of electronic health records (EHRs), physical therapists must understand the computer software the EHR uses when documenting the patient's progress.

FIGURE 17.1 Woman using assistive device to walk.

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Professional Profiles

Name: Rachel, DPT, CSCS, MSC, USN
Title: Physical Therapist
Education: PhD in Physical Therapy, BS in Exercise Science, Fellow-in-Training in the Army–Baylor Doctoral Fellowship of Orthopedic Manual Physical Therapy

Q: Describe your job and organization.

A: As a physical therapist in the U.S. Navy, I work in an academic setting with a mix of both inpatients and outpatients while earning a Doctor of Science degree through a fellowship in Orthopedic Manual Physical Therapy. The settings are very similar to civilian practice with a variety of ages—for example, in a hospital-based setting with young active-duty service members recovering from orthopedic injuries or older veterans recovering from neurologic or orthopedic injuries. I have also worked in a forward deployed setting as the primary musculoskeletal provider, where I was able to see patients without a physician referral.

Q: Describe a typical work day.

A: I usually see 12 patients a day, which includes four to six initial evaluations and six to eight re-evaluations or follow-up treatments. I see patients half of the day and I'm either in class or conducting research the rest of the day. Each patient visit requires a note in the medical record that includes a physical therapy diagnosis, treatment plan, and prognosis.

Q: Why did you choose this profession?

A: I was very active in sports as a kid and required physical therapy to recover from sports injuries. I have always been interested in serving others, so serving those in the Navy as a physical therapist was a bonus! I have been able to help patients learn to walk again after a stroke or amputation and return to sport after an acute ankle sprain. Each day is different, which keeps me engaged and excited.

Q: What challenges you most about this profession?

A: Keeping up with the most recent evidenced-based research can be challenging. Physical therapy is a rapidly growing profession with research to support or refute evaluation or treatment techniques, and the profession requires a commitment to continuous learning in order to provide the best possible outcomes for patients.

Q: Is there room for advancement in this field?

A: A new graduate from a physical therapy program can take a residency in a specialty area such as orthopedics, neurology, or pediatrics and obtain specialty certification. Further training in a fellowship or obtaining a Doctor of Science or PhD are also options. Advancement is also possible as a clinic manager or director of rehabilitation services.

Q: Explain what part of your academic training most prepared you for this profession.

A: There was a significant emphasis on patient-friendly communication, which I consider essential to be an effective physical therapist. As a professional, I ask my patients to engage in a treatment plan that will help them recover, but this requires work and participation on their part. If they don't understand why they need to do what I am instructing them to do, I won't get patient compliance and might not be successful in helping them get better.

Q: What obstacles have you had in pursuing your goals and how did you overcome them?

A: I was never particularly good in general science classes, so that was a challenge for me as an undergraduate. I was able to overcome obstacles through study groups and tutors. As a newly licensed physical therapist, it was challenging to apply what I learned in classes to certain patients that didn't fit a specific diagnosis. Talking through clinical scenarios with clinical mentors has been very helpful.

Q: What advice would you give someone who is considering this career?

A: I would recommend observing or shadowing a licensed physical therapist in a variety of settings to learn about the many different areas where physical therapists can be employed. Good hands-on skills are important as are being personable, kind and patient and a good communicator.

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. Because of their close interaction with patients, physical therapists must observe strict confidentiality requirements and only discuss patients' confidential information with those medical personnel who are involved in treating the patient.

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. Some therapists work to prevent injury and loss of mobility, developing fitness and wellness programs to develop a healthy and active lifestyle.

Work Environment

Physical therapists practice in hospitals, clinics, and private offices that have specially equipped facilities. They also treat patients in hospital rooms, homes, or schools. These jobs can be physically demanding because therapists often have to stoop, kneel, crouch, lift, and stand for long periods. In addition, physical therapists move heavy equipment and lift patients or help them turn, stand, or walk.

In 2014, most full-time physical therapists worked a 40-hour week; some worked evenings and weekends to fit their patients' schedules. About 20% of physical therapists worked part time.

Employment Opportunities

Physical therapists held about 210,900 jobs in 2014. 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 work in a private practice, but also work part time in another healthcare facility.

About 60% of physical therapists worked in hospitals or in offices of other physical therapists. Additional jobs were in the home healthcare services industry, nursing care facilities, outpatient care centers, and offices of physicians. Some self-employed physical therapists in private practice saw individual patients and contracted to provide services in hospitals, rehabilitation centers, nursing care facilities, home healthcare agencies, adult day care programs, and schools. Physical therapists also teach in academic institutions and conduct research.

Educational and Legal Requirements

Today's entrants to this profession need a post-baccalaureate degree from an accredited physical therapy program. All states regulate the practice of physical therapy, which usually requires passing scores on national and state examinations.

Education and Training

The American Physical Therapy Association's (APTA) accrediting body, the Commission on Accreditation of Physical Therapy Education (CAPTE), accredits entry-level academic programs in physical therapy. In 2015, there were 218 physical therapist education programs, all of which awarded doctoral degrees.[1] Doctoral degree programs typically last three years, with most programs requiring a bachelor's degree and completion of prerequisites. Most accredited programs require applicants to use the Physical Therapist Centralized Application Service (PTCAS).[2]

Physical therapist education programs include foundational science courses, such as biology, anatomy, physiology, cellular histology, exercise physiology, neuroscience, biomechanics, pharmacology, pathology, and radiology/imaging, as well as behavioral science courses, such as **evidence-based practice** and clinical reasoning. Some of the clinically based courses include medical screening, examination tests and measures, diagnostic process, therapeutic interventions, **outcomes assessment**, and practice management. In addition to classroom and laboratory instruction, students receive supervised clinical experience.

Among the undergraduate courses that are useful when one applies to a physical therapist education program are anatomy, biology, chemistry, physics, social science, mathematics, and statistics. Before granting admission, many programs require volunteer experience in the physical therapy department of a hospital or clinic.

Licensure

All states regulate the practice of physical therapy. Eligibility requirements vary by state. Typical requirements for physical therapists include graduation from an accredited physical therapy education program, passing the National Physical Therapy Examination, and fulfilling state requirements such as jurisprudence exams. A number of states require continuing education as a condition of maintaining licensure.

Certification and Other Qualifications

Physical therapist may obtain certification in eight specialty areas through the American Board of Physical Therapy Specialists. Certification is offered in the following areas: cardiovascular and pulmonary care, clinical electrophysiology, geriatrics, neurology, orthopedics, pediatrics, sports, and women's health. Requirements include completion of at least 2,000 hours of clinical work or completion of an APTA-accredited program in a specialty area and passing an examination.

Physical therapists should have strong interpersonal and communication skills, so they can educate patients about their condition and physical therapy treatments and communicate with patients' families. Physical therapists also should be compassionate and possess a desire to help patients. Manual dexterity is important because of the need to provide therapeutic exercises and manual therapy.

TABLE 17.1 Projections Data for Physical Therapists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Physical therapists	210,900	282,700	71,800	34%

Advancement

Physical therapists are expected to continue their professional development by participating in continuing education courses and workshops. Some physical therapists become board-certified in a clinical specialty. Opportunities for physical therapists exist in academia and research. Some become self-employed, providing contract services or opening a private practice.

Employment Trends

Employment of physical therapists is expected to grow much faster than average. Job opportunities will be good, especially in acute hospital, **rehabilitation**, and orthopedic settings.

Employment Change

Employment of physical therapists is expected to grow 34% from 2014 to 2024, much faster than the average for all occupations. The impact of proposed federal legislation imposing limits on reimbursement for therapy services may adversely affect the short-term job outlook for physical therapists. However, the long-term demand for physical therapists should continue to rise as new treatments and techniques expand the scope of physical therapy practices. Moreover, the increasing numbers of individuals with disabilities or limited function will spur demand.

The increasing population of older adults will drive growth in the demand for physical therapy services. The older adult population is particularly vulnerable to chronic and debilitating conditions that require therapeutic services. Also, the baby-boom generation is entering the prime age for heart attacks and strokes, increasing the demand for cardiac and physical rehabilitation. And increasing numbers of children will need physical therapy as technological advances save the lives of a larger proportion of newborns with severe birth defects.

Future medical developments also should permit a higher percentage of trauma victims to survive, creating additional demand for rehabilitative care. In addition, growth may result from advances in medical technology that could permit the treatment of an increasing number of disabling conditions that were untreatable in the past.

Widespread interest in health promotion also should 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.

Job Prospects

Job opportunities will be good for licensed physical therapists in all settings. Job opportunities should be particularly good in acute hospital, rehabilitation, and orthopedic settings, where older adults are most often treated. Physical therapists with specialized knowledge of particular types of treatment also will have excellent job prospects. Physical therapists willing to work in rural areas will be at an advantage because most physical therapists reside in highly populated urban and suburban areas. TABLE 17.1 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual wages of physical therapists were $82,390 in May 2014. The middle 50% earned between $68,690 and $96,060. The lowest 10% earned less than $56,800, and the highest 10% earned more than $116,090. Median annual wages in the industries employing the largest numbers of physical therapists in May 2014 are shown in TABLE 17.2.

Related Occupations

Physical therapists rehabilitate people with physical disabilities. Others who work in the rehabilitation field include audiologists, chiropractors, occupational therapists, recreational therapists, rehabilitation counselors, respiratory therapists, and speech-language pathologists.

TABLE 17.2 Median Annual Wages in the Industries Employing the Largest Numbers of Physical Therapists, May 2014

Home healthcare services	$94,600
Nursing care facilities	$88,890
General medical and surgical hospitals	$83,320
Offices of physicians	$82,130
Offices of other health practitioners	$81,790

Additional Information

Career information on physical therapy and a list of schools offering accredited programs can be obtained from:

- The American Physical Therapy Association, 1111 North Fairfax St., Alexandria, VA 22314-1488. Internet: http://www.apta.org
- Commission on Accreditation in Physical Therapy Education, 1111 North Fairfax St., Alexandria, VA 22314-1488. Internet: http://www.capteonline.org/home.aspx

For information about specialty certification, contact:

- American Board of Physical Therapy Specialists, 1111 North Fairfax St., Alexandria, VA 22314-1488. Internet: http://www.abpts.org/home.aspx

For information about licensure, contact:

- The Federation of State Boards of Physical Therapy, 124 West St. South, Alexandria, VA 22314. Internet: https://www.fsbpt.org/

PHYSICAL THERAPIST ASSISTANTS AND AIDES

Significant Points

- Employment is projected to grow much faster than average.
- Physical therapist assistants should have very good job prospects; on the other hand, aides may face keen competition from the large pool of qualified applicants.
- Aides usually learn skills on the job, while physical therapist assistants have an associate's degree; most states require licensing for assistants.
- Most jobs are in offices of other health practitioners and in hospitals.

Work Description

Physical therapist assistants and aides help physical therapists to provide treatment that improves patient mobility, relieves pain, and prevents or lessens physical disabilities of patients. A physical therapist might ask an assistant to help patients exercise or learn to use crutches, for example, or an aide to gather and prepare therapy equipment. Patients include accident victims and individuals with disabling conditions such as lower-back pain, arthritis, heart disease, fractures, head injuries, and cerebral palsy.

Physical therapist assistants perform a variety of tasks. Under the direction and supervision of physical therapists, they provide part of a patient's treatment. This might involve exercises, massages, electrical stimulation, **paraffin baths**, hot and cold packs, traction, and ultrasound. Physical therapist assistants record the patient's responses to treatment and report the outcome of each treatment to the physical therapist. An example of a physical therapist assistant helping a patient is seen in FIGURE 17.2.

Physical therapist aides help make therapy sessions productive, under the direct supervision of a physical therapist or physical therapist assistant. They usually are responsible for keeping the treatment area clean and organized and for preparing for each patient's therapy. When patients need assistance moving to or from a treatment area, aides push them in a wheelchair or provide them with a shoulder to lean on. Physical therapist aides are not licensed and do not perform the clinical tasks of a physical therapist assistant in states where licensure is required.

The duties of aides include some clerical tasks, such as ordering depleted 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 facility.

Work Environment

Physical therapist assistants and aides need a moderate degree of strength because of the physical exertion required in assisting patients with their treatment. In some cases, assistants and aides need to lift patients. Frequent kneeling, stooping, and standing for long periods also are part of the job.

The hours and days that physical therapist assistants and aides work vary with the facility. About 28% of all physical therapist assistants and aides work part time. Many outpatient physical therapy offices and clinics keep evening and weekend hours to accommodate patients' personal schedules.

FIGURE 17.2 Physical therapist assistant helping patient exercise.

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Employment Opportunities

Physical therapist assistants and aides held about 128,700 jobs in 2014. Physical therapist assistants held about 78,700 jobs; physical therapist aides approximately 50,000. Both work with physical therapists in a variety of settings. About 76% of jobs were in offices of physical therapists or in hospitals. Others worked primarily in nursing care facilities, offices of physicians, home healthcare services, and outpatient care centers.

Educational and Legal Requirements

Most physical therapist aides are trained on the job, but most physical therapist assistants earn an associate's degree from an accredited physical therapist assistant program. Some states require licensing for physical therapist assistants.

Education and Training

Employers typically require physical therapist aides to have a high school diploma. They are trained on the job, and most employers provide clinical on-the-job training.

In most states, physical therapist assistants are required by law to hold an associate's degree. The American Physical Therapy Association's Commission on Accreditation in Physical Therapy Education (CAPTE) accredits postsecondary physical therapy assistant programs. In 2014, there were 333 accredited programs, which usually last two years and culminate in an associate's degree.[3]

Programs are divided into academic study and hands-on clinical experience. Academic course work includes algebra, anatomy and physiology, biology, chemistry, and psychology. Clinical work includes certifications in cardiopulmonary resuscitation (CPR) and other first aid, and field experience in treatment centers. Both educators and prospective employers view clinical experience as essential to ensuring that students understand the responsibilities of a physical therapist assistant.

Licensure

Licensing is not required to practice as a physical therapist aide. However, most states require licensure or registration in order to work as a physical therapist assistant. States that require licensure stipulate specific educational and examination criteria, such as graduation from an accredited program and passing the National Physical Therapy Exam administered by the Federation of State Boards of Physical Therapy. Additional requirements may include certification in CPR and other first aid, and a minimum number of hours of clinical experience. Complete information on regulations can be obtained from state licensing boards.

Other Qualifications

Physical therapist assistants and aides should be well organized, detail oriented, and caring. They usually have strong interpersonal skills and a desire to help people in need. They need physical stamina and should enjoy physical activity.

Advancement

Some physical therapist aides advance to become therapist assistants after gaining experience and, often, additional education. Sometimes, this education is required by law. Some physical therapist assistants advance by specializing in a clinical area. They gain expertise in treating a certain type of patient, such as geriatric or pediatric, or a type of ailment, such as sports injuries. Many physical therapist assistants advance to administrative positions. These positions might include organizing all the assistants in a large physical therapy organization or acting as the director for a specific department such as sports medicine. Other assistants go on to teach in accredited physical therapist assistant academic programs, lead health risk-reduction classes for older adults, or organize community activities related to fitness and risk reduction.

Employment Trends

Employment is expected to grow much faster than average because of increasing consumer demand for physical therapy services. Job prospects for physical therapist assistants are expected to be very good. Aides should experience keen competition for jobs.

Employment Change

Employment of physical therapist assistants is expected to grow by 41% over the 2014 to 2024 decade, much faster than the average for all occupations. Employment of physical therapist aides is expected to grow by 39% over the 2014 to 2024 decade, much faster than the average for all occupations. The impact of federal limits on Medicare and Medicaid reimbursement for therapy services may adversely affect the short-term job outlook for physical therapist assistants and aides. However, long-term demand for physical therapist assistants and aides will continue to rise, as the number of individuals with disabilities or limited function grows.

The increasing number of people who need therapy reflects, in part, the increasing elderly population. The older adult population is particularly vulnerable to chronic and debilitating conditions that require therapeutic services. These patients often need additional assistance in their treatment, making the roles of assistants and aides vital. In addition, the large baby-boom generation is entering the prime age for heart attacks and strokes, further increasing the demand for cardiac and physical rehabilitation. Moreover, future medical developments should permit an increased percentage of trauma victims to survive, creating added demand for therapy services.

Physical therapists are expected to increasingly use assistants to reduce the cost of physical therapy services. Once

TABLE 17.3 Projections Data Physical Therapist Assistants and Aides, 2014–2024

Occupational Title	Employment, 2014	Project Employment, 2024	Change, 2014–2024	
			Number	Percentage
Physical therapist assistants and aides	128,700	180,200	51,400	40%
Physical therapist assistants	78,700	110,700	31,900	41%
Physical therapist aides	50,000	69,500	19,500	39%

a patient is evaluated and a treatment plan is designed by the physical therapist, the physical therapist assistant can provide many parts of the treatment, as approved by the therapist.

Job Prospects

Opportunities for individuals interested in becoming physical therapist assistants are expected to be very good. Physical therapist aides may face keen competition from the large pool of qualified individuals. In addition to employment growth, job openings will result from the need to replace workers who leave the occupation permanently. Physical therapist assistants and aides with prior experience working in a physical therapy office or other healthcare setting will have the best job opportunities. TABLE 17.3 shows some projection data provided by the Department of Labor.

Earnings

Median annual wages of physical therapist assistants were $54,410 in May 2014. The middle 50% earned between $43,280 and $65,710. The lowest 10% earned less than $31,840, and the highest 10% earned more than $75,530. Median annual wages in the industries employing the largest numbers of physical therapist assistants in May 2014 are included in TABLE 17.4.

Median annual wages of physical therapist aides were $24,650 in May 2014. The middle 50% earned between $21,020 and $29,870. The lowest 10% earned less than $18,370, and the highest 10% earned more than $36,830. Median annual wages in the industries employing the largest numbers of physical therapist aides in May 2014 are shown in TABLE 17.5.

Related Occupations

Physical therapist assistants and aides work under the supervision of physical therapists. Other workers in the healthcare field who work under similar supervision include dental assistants; medical assistants; occupational therapist assistants and aides; pharmacy aides; pharmacy technicians; nursing, psychiatric, and home health aides; personal and home care aides; and social and human service assistants.

Additional Information

Career information on physical therapy and a list of schools offering accredited programs can be obtained from:

- The American Physical Therapy Association, 1111 North Fairfax St., Alexandria, VA 22314-1488. Internet: http://www.apta.org
- Commission on Accreditation in Physical Therapy Education, 1111 North Fairfax St., Alexandria, VA 22314-1488. Internet: http://www.capteonline.org/home.aspx

TABLE 17.4 Median Annual Earnings in the Industries Employing the Largest Numbers of Physical Therapist Assistants, May 2014

Home healthcare services	$62,810
Nursing care facilities	$60,840
General medical and surgical hospitals	$51,320
Offices of other health practitioners	$52,700
Offices of physicians	$51,500

TABLE 17.5 Median Annual Earnings in the Industries Employing the Largest Numbers of Physical Therapist Aides, May 2014

Nursing care facilities	$29,890
General medical and surgical hospitals	$28,610
Specialty (except psychiatric and substance abuse) hospitals	$27,500
Offices of physicians	$27,950
Offices of other health practitioners	$24,730

For information about licensure, contact:

- The Federation of State Boards of Physical Therapy, 124 West St. South, Alexandria, VA 22314. Internet: https://www.fsbpt.org/

ORTHOTISTS AND PROSTHETISTS

Significant Points

- Employment is projected to grow much faster than average.
- Orthotists and prosthetists should have very good job prospects.
- A master's degree and certification is required for a practitioner.
- Most jobs are in offices of other health practitioners and in hospitals.

Work Description

Orthotics and prosthetics (O&P) refers to the evaluation, fabrication, and custom fitting of artificial limbs and orthopedic braces. Examples of artificial limbs are seen in **FIGURE 17.3**. An **orthotist** designs and fits corrective braces, inserts, and supports for body parts that need straightening or other curative functions. A **prosthetist** designs, measures, fits, and adjusts artificial limbs for amputees and devices for people with musculoskeletal or neurological conditions. An **orthotic and prosthetic technician** assists a credentialed individual by providing technical support. All of these professionals combine knowledge of cutting-edge technology and hands-on patient care. These individuals are sometimes referred to as O&P professionals.

O & P professionals evaluate and interview patients to determine their needs. They measure patients so that their medical devices are properly designed and will fit the patient. An example using technology to measure a patient's foot for an orthotic is seen in **FIGURE 17.4**. They may create a mold of the patient's body part that will be fitted with a brace or artificial limb and select the materials to be used in fabricating the device. After fitting, testing, and adjusting the device on a patient, they will provide instructions on how to use and care for the devices. As needed, they will repair or update a patient's orthotic or prosthetic device.

O & P professionals document the patient's progress on a regular basis. With the increased use of electronic health records (EHRs), they must understand the computer software the EHR uses when documenting the patient's progress. Because of their close interaction with patients, orthotists and prosthetists must observe strict confidentiality requirements and only discuss patient confidential information with those medical personnel who are involved in treating the patient.

Some individuals work as **pedorthists**. A pedorthist selects, modifies, or creates footwear to help people maintain or regain as much mobility as possible. Pedorthists combine knowledge of human anatomy and biomechanical evaluation to treat painful and disabling conditions of the foot and ankle.

FIGURE 17.3 Artificial limbs.
© Vereshchagin Dmitry/Shutterstock

FIGURE 17.4 Foot on 3D scanner for orthotics.
© Rainer Plendl/Shutterstock

Work Environment

Orthotists and prosthetists practice in patient care facilities, hospitals, clinics, and private offices. They may also work in Veterans Administration (VA) facilities, rehabilitation facilities, long-term care facilities, and in patients' homes. Most work is performed in private offices where they meet with patients and then design orthotic and prosthetic devices. They sometimes work in the shops where the orthotics and prosthetics are created. Pedorthists work in settings such as specialty shoe stores, orthotic and prosthetic patient care facilities, VA facilities, and rehabilitation facilities.

Because O&P professionals may be exposed to health and safety hazards when working with certain materials, they must be follow proper procedures and use safety devices such as goggles, gloves, and masks. Doing so minimizes the risk of illness or injury.

Employment Opportunities

Orthotists and prosthetists held about 8,300 jobs in 2014. More than 50% of these jobs were held in companies involving medical equipment and supplies manufacturing or in health and personal care stores. Most O&P professionals work full time.

Educational and Legal Requirements

Orthotists and prosthetists require a master's degree and certification before beginning work in the field. A one-year residency is required before obtaining certification. Technicians frequently graduate from a two-year associate's program.

Education and Training

Orthotist and prosthetist practitioners must receive a master's degree in orthotics and prosthetics. These programs generally take two years to complete and involve courses in upper- and lower-extremity orthotics and prosthetics, spinal orthotics, and plastics and other materials. A bachelor's degree is required for admission and can be in any discipline as long as certain prerequisites are met. Those prerequisites included courses in science and mathematics.

A clinical residency is required as part of the master's program. At least 500 hours of clinical experience is required, split evenly between orthotics and prosthetics.

Orthotic and prosthetic technicians may either graduate from an associate's degree program or may possess a high school diploma, GED, or college degree and complete two years of technical experience under the supervision of a credentialed individual.

The National Commission on Orthotic and Prosthetic Education (NCOPE) accredits academic programs in orthotics and prosthetics. In 2016, there were 19 orthotics and prosthetics education programs. Twelve programs awarded master's degrees for the practitioner level and seven programs awarded associate degrees for the technician level.[4] Most accredited programs require applicants to use the Orthotics and Prosthetics Residency Centralized Application Service (OPRESCAS).[5]

Licensure

Some states require licensure. For those that do, becoming certified through the American Board for Certification in Orthotics, Prosthetics, and Pedorthics (ABC) is also a requirement. Eligibility requirements vary by state.

Certification and Other Qualifications

The American Board for Certification in Orthotics, Prosthetics, and Pedorthics (ABC) is the oldest established governing body that issues credentials in this field. Orthotists who complete a master's degree program and clinical residency may sit for a three-part examination and receive the Certified Orthotist (CO) credential. Prosthetists that complete a master's degree program and clinical residency may sit for a three-part examination and receive the Certified Prosthetist (CP) credential. Individuals who meet the requirements and pass the examinations of both disciplines may receive the Certified Prosthetist Orthotist (CPO) credential.

Orthotic and prosthetic technicians who complete an associate's degree program or possess a high school diploma, GED, or college degree and two years of clinical experience may sit for an examination and receive the Certified Orthotic Technician (CTO) or Certified Prosthetic Technician (CTP) credential. Individuals who meet the requirements and pass the examinations of both disciplines may receive the Certified Prosthetic-Orthotic Technician (CTPO) credential.

Those individuals seeking to work as pedorthists must possess a high school diploma, GED, or college degree and complete an NCOPE approved pedorthic precertification program. If they meet these requirements and pass an examination, they can receive the Certified Pedorthist (CPed) credential.

Other credentials are offered by the ABC. One may obtain the Certified Fitter-orthotics (CFo) credential, the Certified Fitter-mastectomy (CFm) credential, or the Certified Fitter-therapeutic shoes (CFts) credential.

The Board of Certification/Accreditation (BOC) also certifies individuals in the orthotics and prosthetics field. One can become a BOC Orthotist (BOCO), a BOC Prosthetist (BOCP), a BOC Pedorthist (BOCPD), a BOC Orthotic Fitter (BOC COF), or a BOC Mastectomy Fitter (BOC CMF). Each of these credentials requires an individual to complete an education program specific to the identified role and pass an examination.

Both interpersonal and technical skills are needed to be successful in this field. Recording measurements requires attention to detail and designing orthotics or prosthetics requires manual dexterity. Creativity and problem-solving skills are necessary to address complex patient situations. Communication skills are crucial in order to obtain information from patients and instruct them on the use and care of devices.

TABLE 17.6 Projections Data for Orthotists and Prosthetists, 2014–2024

Occupational Title	Employment, 2014	Project Employment, 2024	Change, 2014–2024	
			Number	Percentage
Orthotists and prosthetists	8,300	10,100	1,900	23%

Employment Trends

Employment is expected to grow much faster than average because of increasing consumer demand for orthotic and prosthetic services.

Employment Change

Employment of orthotists and prosthetists is expected to grow by 23% over the 2014 to 2024 decade, much faster than the average for all occupations. Because of the small numbers of persons in the profession, the total increase over the next decade is only expected to be 1,900.

The increasing number of people who need therapy reflects, in part, the increasing elderly population. Two of the leading reasons for limb loss, diabetes and cardiovascular diseases, are common among older adults. Technological advances that result in an increase in natural movement while using an artificial device may spur demand. Braces and other orthopedic footwear will also be needed by older adults.

Job Prospects

Opportunities for individuals interested in becoming orthotists and prosthetists are expected to be very good. In addition to employment growth, job openings will result from the need to replace workers who leave the occupation permanently. Those individuals possessing professional certification will have the best job opportunities. **TABLE 17.6** shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual wages of orthotists and prosthetists were $64,040 in May 2014. The middle 50% earned between $47,770 and $87,050. The lowest 10% earned less than $35,240, and the highest 10% earned more than $110,690. Median annual wages in the industries employing the largest numbers of orthotists and prosthetists in May 2014 are shown in **TABLE 17.7.**

According to a 2013 study by the American Orthotic and Prosthetic Association of compensation and benefits, O&P practitioners received average compensation of $75,300; assistants received $43,000; technicians received $45,630; pedorthists received $52,065; and fitters received $39,000.

Related Occupations

Orthotists and prosthetists work both independently and with team members. Other workers in the healthcare field who work under similar circumstances include dental and ophthalmic laboratory technicians, medical appliance technicians, physicians and surgeons, physical therapists, and respiratory therapists.

Additional Information

For more information about orthotists and prosthetists, visit:

- American Academy of Orthotists and Prosthetists, 1331 H Street NW, Suite 501, Washington, DC 20005. Internet: http://www.opcareers.org/

For information on accredited programs, visit:

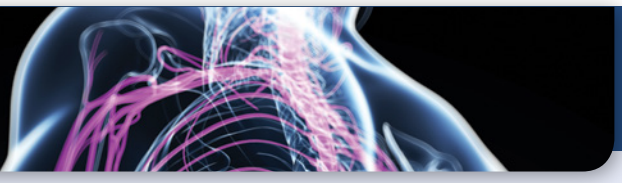
- National Commission on Orthotic and Prosthetic Education, 330 John Carlyle St., Suite 200, Alexandria, VA 22314. Internet: http://www.ncope.org/

For information about certification, contact:

- American Board for Certification in Orthotics, Prosthetics, and Pedorthics, 330 John Carlyle St., Suite 210, Alexandria, VA 22314. Internet: https://www.abcop.org/Pages/default.aspx
- Board of Certification/Accreditation, 10451 Mill Run Circle, Suite 200, Owings Mill, MD 21117-5575. Internet: http://www.bocusa.org/about-boc

TABLE 17.7 Median Annual Wages in the Industries Employing the Largest Numbers of Orthotists and Prosthetists, May 2014

Medical equipment and supplies manufacturing	$77,510
Health and personal care stores	$73,840
General medical and surgical hospitals	$59,980
Offices of healthcare practitioners	$71,180
Federal executive branch	$68,170



LEARNING PORTFOLIO

Issues for Discussion

1. Many individuals have experienced the assistance of physical therapists directly. Discuss with your instructor and classmates the experiences you have had with a physical therapist and the effect physical therapy had upon the problem for which you received treatment.
2. Watch the video *You Can Be Me: Careers in Physical Therapy* about careers in physical therapy at http://www.apta.org/YouCanBeMe/ and the video *Why I Choose a Career in Physical Therapy* at http://www.apta.org/ProspectiveStudents/WhyIChosePT/. Decide what about either or both of these videos strike you as explaining the essence of working as a physical therapist. Discuss with your instructor and classmates.
3. Watch the video *O&P Your Future, Everyone Benefits* under Career Awareness at http://www.opcareers.org/default.asp. Discuss with your instructor and classmates what impressions this video gives you and decide whether you would suggest any of the careers in the video to your friends or acquaintances.

Enrichment Activities

1. Artificial limbs have a long history. Research this history and create a timeline (whether a narrative piece, a PowerPoint presentation, or an infographic) that describes the types of prosthetics created, the materials used, and the types of assistance these prosthetics have offered.
2. Interview a physical therapist, physical therapist assistant or aide, or an O&P professional. Create and submit to your instructor a list of questions and answers from your interview and identify which answer, if any, was the most surprising.

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1. Commission on Accreditation in Physical Therapy Education (CAPTE). *Accredited PT Programs*. Internet: http://www.apta.org/apta/directories/accreditedschools.aspx?navID=10737423273
2. Physical Therapist Centralized Application Service. Internet: http://www.ptcas.org/home.aspx
3. Commission on Accreditation in Physical Therapy Education. *Accredited PTA Programs*. Internet: http://www.apta.org/apta/directories/accreditedschools.aspx?navID=10737421958&site=capte
4. National Commission on Orthotic and Prosthetic Education. *List of Schools*. Internet: http://www.ncope.org/students/schools/
5. Orthotics and Prosthetics Residency Centralized Application Service. Internet: http://www.ncope.org/residents/oprescas/

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CHAPTER 18

Occupational Therapy*

Key Terms

Adaptive equipment
Cognitive skills
Emotional disorders
Home health care
Mental health
Multidisciplinary team
Occupational therapist
Occupational therapy
Occupational therapy aide
Occupational therapy assistant
Perceptual skills
Physical disabilities
Rehabilitation center
Wellness and health promotion

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

OCCUPATIONAL THERAPISTS

Significant Points

- Employment is expected to grow much faster than average, and job opportunities should be good, especially for therapists treating older adults.
- Occupational therapists are regulated in all 50 states; requirements vary by state.
- Occupational therapists are increasingly taking on supervisory roles, allowing assistants and aides to work more closely with clients under the guidance of a therapist.

Work Description

Occupational therapy refers to therapy provided to those who are recovering from illness or injury that encourages rehabilitation by performing the activities of daily life. **Occupational therapists** treat people with mental, physical, developmental, or emotional disabilities so that they may participate in the things they want and need to do through therapeutic use of daily activities. They employ a variety of techniques designed to help individuals develop or maintain daily living skills, and 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 various kinds can be used for treatment purposes. When working with children, for example, occupational therapists often use toys, an example of which is seen in FIGURE 18.1. For adults, therapy may include anything from activities that strengthen muscles to using a computer. Although 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. Specially designed computer programs help patients improve **cognitive skills**, including decision making, abstract reasoning, and problem solving, along with **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.

FIGURE 18.1 Use of toy to develop cognitive ability.
© Olesia Bilkei/Shutterstock

During each therapy session, the therapist assesses the patient to determine treatment effectiveness and progress made toward meeting the treatment's goals. These assessments serve as the 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. An example of adaptive equipment used in walking is seen in FIGURE 18.2.

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 include microprocessing devices that permit individuals with paraplegia and quadriplegia to operate wheelchairs and household switches for appliances such as telephones, television sets, and radios. As such devices move out of the research and development stage, occupational therapists become 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. Some therapists provide early intervention to infants and toddlers who have or are at risk of having developmental delays. A growing number of therapists are working in the **wellness and health**

FIGURE 18.2 Adaptive equipment used for walking.
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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. Therapists may recommend changes in the home environment after identifying potential hazards their patients may encounter.

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, written 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. With the increased use of electronic health records (EHRs), occupational therapists must understand the computer software the EHR uses. Because of their close interaction with patients, occupational therapists must observe strict confidentiality requirements and only discuss a patient's confidential information with those medical personnel who are involved in treating the patient.

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 to accommodate patient schedules. 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 healthcare costs, third-party payers are beginning to encourage occupational therapy assistants and aides to take more hands-on responsibility. Having assistants and aides work more closely with clients under the guidance of a therapist should reduce the cost of therapy. Around 25% of occupational therapists worked part time.

Employment Opportunities

Occupational therapists held about 114,600 jobs in 2014. The largest number of jobs were in offices of other health practitioners (including offices of other occupational therapists), which employed about 24% of occupational therapists, and hospitals, which employed about 27% of occupational

Professional Profiles

Name: Erica, OTR, CHT
Title: Occupational Therapist, Certified Hand Therapist
Education: MS in Occupational Therapy, BS in Occupational Science

Q: Describe your job and organization.

A: I work in an outpatient orthopedic private practice setting as an occupational therapist with certification in hand therapy. The clinic is staffed with eight physical therapists and two other occupational therapists specializing in hand therapy. Our practice is in two different locations in a very active urban area close to the beach.

Q: Describe a typical work day.

A: On a typical work day I see 12 patients who are scheduled for a 30-minute session, except for new evaluations, which take an hour. The length of the patient sessions ranges from 45 to 60 minutes. I spend four to five minutes documenting each visit except for new evaluations which takes 15 minutes. Therapists document in electronic medical records and fax reports to the offices of the patient's physician.

Q: Why did you choose this profession?

A: I chose occupational therapy because I love to work with people. I originally wanted to work with children with disabilities. However, I fell in love with the complexity of therapy of the hand and upper extremity through my mentorship program. Motivating people to return to a previous level of functioning is the most gratifying part of my job.

Q: What challenges you the most about this profession?

A: Staying up to date with all of the changes in health insurance is challenging! If documentation is incomplete or incorrect, the patient's health insurance may not cover the cost of therapy—ultimately delaying therapy and delaying the patient's return to normal functioning.

Q: Is there room for advancement in this field?

A: We must stay up to date with the times, keeping ourselves and clients educated. From the orthopedic world, I feel that we could better educate the public on how to prevent injuries and how to manage our bodies as we age. Occupational therapists can advance in their field through specialization in pediatrics, orthopedics, mental health, physical disabilities or older adults and other areas. Certification in hand therapy requires working in a hand clinic for five years before sitting for the exam to become a Certified Hand Therapist (CHT).

Q: Name and explain what part of your academic training most prepared you for this profession.

A: Clinical rotations best prepared me for my profession. Combining classes with clinical rotations assisted in the application of knowledge. Courses that provided the foundation for my profession were gross anatomy and physical disabilities. The course in physical disabilities was beneficial because eventually a therapist will see patients with those crazy injuries, diseases, and disabilities.

Q: What do you wish you would have known in high school or college about pursuing this career?

A: I would have spent more time observing occupational therapists in different work settings before selecting clinical rotations. Once in graduate school you must quickly decide which areas to choose for fieldwork and fieldwork prepares you to work in specific areas such as orthopedics or mental health.

Q: What advice would you give someone who is considering this career?

A: Observe occupational therapists in multiple work settings—each setting is dynamic in its own way. The more information you have about the different specialty areas, the easier it is to choose fieldwork sites and specialty areas as a professional. The outpatient setting is very fast paced and skills most essential for success in this setting is the ability to multi-task, problem solve and set priorities throughout the day. You need to be confident in what you have learned and to continue learning. Desirable personality characteristics are to be outgoing, empathetic, and non-judgmental.

therapists. Other major employers included home healthcare services, public and private educational services, and nursing care facilities. Some occupational therapists were employed by home healthcare services, outpatient care centers, physicians' offices, individual and family services, community care facilities for older adults, and government agencies.

A small number of occupational therapists were self employed in private practice. These practitioners treated clients referred by other health professionals. They also provided contract or consulting services to nursing care facilities, schools, adult day care programs, and home healthcare agencies.

Educational and Legal Requirements

Occupational therapists must be licensed, requiring a master's degree in occupational therapy, six months of supervised fieldwork, and passing scores on national and state examinations.

Education and Training

A master's degree or higher in occupational therapy is the minimum requirement for entry into the field. In addition, occupational therapists must attend an academic program accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) in order to sit for the national certifying exam. In 2015, 160 master's degree programs or combined bachelor's and master's degree programs were accredited, and seven doctoral degree programs were accredited.[1]

Most schools have full-time programs, although a growing number are offering weekend or part-time programs as well. Coursework in occupational therapy programs includes the physical, biological, and behavioral sciences, as well as applied occupational therapy theory and skills. Programs also require the completion of at least 24 weeks of supervised fieldwork as part of the academic curriculum.

People considering the profession of occupational therapy should take high school courses in biology, chemistry, physics, health, art, and the social sciences. College admissions offices also look favorably on paid or volunteer experience in the healthcare field. Relevant undergraduate majors include biology, psychology, sociology, anthropology, liberal arts, and anatomy.

Licensure

All 50 states, Puerto Rico, Guam, and the District of Columbia regulate the practice of occupational therapy. To obtain a license, applicants must graduate from an accredited educational program and pass a national certification examination. Those who pass the exam are awarded the title Occupational Therapist, Registered (OTR). Some states have additional requirements for therapists who work in schools or early intervention programs. These requirements may include education-related classes, an education practice certificate, or early intervention certification.

Certification and Other Qualifications

Certification is voluntary. The National Board for Certification in Occupational Therapy certifies occupational therapists through a national certifying exam.[2] In some states, the national certifying exam meets requirements for regulation, while other states have their own licensing exam.

Some occupational therapists obtain certification in a particular specialty. Board certifications currently recognized by the American Occupational Therapy Association include gerontology, mental health, pediatrics, and physical rehabilitation. Specialty certifications include driving and community mobility; environmental modification; feeding, eating, and swallowing; and low vision.

Occupational therapists need patience and strong interpersonal skills to inspire trust and respect in their clients. Patience is necessary because many clients may not show rapid improvement. Ingenuity and imagination in adapting activities to individual needs are assets. Writing skills are important because an occupational therapist must be able to explain the patient's treatment plan to the patient and record the patient's progress. Occupational therapists working in home healthcare services also must be able to adapt to a variety of settings.

Advancement

Occupational therapists are expected to continue their professional development by participating in continuing education courses and workshops. In fact, a number of states require continuing education as a condition of maintaining licensure.

Therapists are increasingly taking on supervisory roles. Because of rising healthcare costs, third-party payers are encouraging occupational therapy assistants and aides to take more hands-on responsibility for clients. Occupational therapists can choose to advance their careers by taking on administrative duties and supervising assistants and aides.

Occupational therapists also can advance by specializing in a clinical area and gaining expertise in treating a particular type of patient or ailment. Therapists have specialized in gerontology, mental health, pediatrics, and physical rehabilitation. In addition, some occupational therapists choose to teach classes in accredited occupational therapy educational programs.

Employment Trends

Employment of occupational therapists is expected to grow much faster than the average for all occupations. Job opportunities should be good, especially for occupational therapists treating older adults.

Employment Change

Employment of occupational therapists is expected to increase 27% between 2014 and 2024, much faster than the

TABLE 18.1 Projections Data for Occupational Therapists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Occupational therapists	114,600	145,100	30,400	27%

average for all occupations. The increasing older adult population will drive growth in the demand for occupational therapy services. In the short term, the impact of proposed federal legislation imposing limits on reimbursement for therapy services may adversely affect the job market for occupational therapists. However, over the long term, the demand for occupational therapists should continue to rise as a result of the increasing number of individuals with disabilities or limited function who require therapy services. The baby-boom generation's movement into middle age, a period when the incidence of heart attack and stroke increases, will spur demand for therapeutic services. Growth in the population of those 75 years and older—an age group that suffers from high incidences of disabling conditions—also will increase demand for therapeutic services. In addition, medical advances now enable more patients with critical problems such as birth defects or limb amputations to survive—patients who ultimately may need extensive therapy.

Hospitals will continue to employ a large number of occupational therapists to provide therapy services to acutely ill inpatients. Hospitals also will need occupational therapists to staff their outpatient rehabilitation programs.

Employment growth in schools will result from the expansion of the school-age population, the extension of services for disabled students, and an increasing prevalence of sensory disorders in children. Increased insurance coverage for therapy related to autism spectrum disorder will further spur the demand for services. Therapists will be needed to help children with disabilities prepare to enter special education programs.

Job Prospects

Job opportunities should be good for licensed occupational therapists in all settings, particularly in acute hospital, rehabilitation, and orthopedic settings because older adults receive most of their treatment in these settings. Occupational therapists with specialized knowledge in a treatment area also will have increased job prospects. Driver rehabilitation and fall-prevention training for older adults are emerging practice areas for occupational therapy. TABLE 18.1 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual earnings of occupational therapists were $78,810 in May 2014. The middle 50% earned between $65,020 and $94,190. The lowest 10% earned less than $52,670, and the highest 10% earned more than $112,950. Median annual earnings in the industries employing the largest numbers of occupational therapist in May 2014 are shown in TABLE 18.2.

Related Occupations

Occupational therapists use specialized knowledge to help individuals perform daily living skills and achieve maximum independence. Other workers performing similar duties include athletic trainers, audiologists, chiropractors, physical therapists, recreational therapists, rehabilitation counselors, respiratory therapists, and speech-language pathologists.

Additional Information

For information on a career in occupational therapy and a list of accredited programs, contact:

- American Occupational Therapy Association, 4720 Montgomery Ln., P.O. Box 31220, Bethesda, MD 20824-1220. Internet: http://www.aota.org

For information about becoming certified as an occupational therapist, contact

- National Board for Certification in Occupational Therapy, 12 South Summit Ave., Suite 100, Gaithersburg, MD 20877. Internet: http://www.nbcot.org

TABLE 18.2 Median Annual Earnings in the Industries Employing the Largest Numbers of Occupational Therapists, May 2014

Home healthcare services	$90,070
Nursing care facilities	$86,750
Offices of other health practitioners	$82,460
General medical and surgical hospitals	$78,950
Elementary and secondary schools	$79,430

OCCUPATIONAL THERAPY ASSISTANTS AND AIDES

Significant Points

- Typical entry-level education for occupational therapy assistants is an associate's degree; in contrast, occupational therapy aides usually receive their training on the job.
- Many states regulate the practice of occupational therapy assistants either by licensing, registration, or certification; requirements vary by state.
- Employment is projected to grow much faster than average as demand for occupational therapist services rises and as occupational therapists increasingly use assistants and aides.
- Job prospects should be very good for occupational therapy assistants; job seekers holding only a high school diploma might face keen competition for occupational therapy aide jobs.

Work Description

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. An example of demonstrating the manner in which to stretch as hand is seen in FIGURE 18.3. Assistants monitor the individual to ensure that the client is performing the activities correctly and to provide encouragement. They may teach patients how to use special equipment to ease difficulties with life activities. 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 submitted to 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.

FIGURE 18.3 Stretching of hand.

© Meinzahn/iStockPhoto

Work Environment

Occupational therapy assistants and aides need to have a moderate degree of strength because of the physical exertion required to assist patients. For example, assistants and aides may need to lift patients. Constant kneeling, stooping, and standing for long periods also are part of the job.

The work schedules of occupational therapy assistants and aides vary by facility and whether they are full or part time. For example, many outpatient therapy offices and clinics have evening and weekend hours to accommodate patients' schedules.

Employment Opportunities

Occupational therapy assistants and aides held about 41,800 jobs in 2014. Occupational therapy assistants held about 33,000 jobs, and occupational therapy aides held approximately 8,800. About 50% of jobs for assistants and aides were in offices of other health practitioners, 15% were in hospitals, and 22% were in nursing care facilities. The rest were primarily in community care facilities for older adults, home healthcare services, individual and family services, and state government agencies.

Educational and Legal Requirements

An associate's degree or a certificate from an accredited community college or technical school is generally required to qualify for occupational therapy assistant jobs. In contrast, occupational therapy aides usually receive most of their training on the job.

Education and Training

There were 215 accredited occupational therapy assistant programs in 2015.[3] The first year of study typically involves an introduction to health care, basic medical terminology, anatomy, and physiology. In the second year, courses are more rigorous and usually include occupational therapy courses in areas such as mental health, adult physical disabilities, gerontology, and pediatrics. Students also must complete 16 weeks of supervised fieldwork in a clinic or community setting.

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 care facilities, occupational or physical therapists' offices, or other healthcare settings.

Occupational therapy aides usually receive most of their training on the job. Qualified applicants must have a high school diploma, strong interpersonal skills, and a desire to help people in need. Applicants may increase their chances of getting a job by volunteering their services, thus displaying initiative and aptitude to the employer.

Licensure

In most states, occupational therapy assistants are regulated and must pass a national certification examination after they graduate. Those who pass the test are awarded the title Certified Occupational Therapy Assistant.

Certification and Other Qualifications

Certification is voluntary. The National Board for Certifying Occupational Therapy certifies occupational therapy assistants through a national certifying exam.[4] Those who pass the test are awarded the title Certified Occupational Therapy Assistant (COTA). In some states, the national certifying exam meets requirements for regulation, but other states have their own licensing exam.

Occupational therapist assistants are expected to continue their professional development by participating in continuing education courses and workshops in order to maintain certification. A number of states require continuing education as a condition of maintaining licensure.

Assistants and aides must be responsible, patient, and willing to take directions and work as part of a team. They must possess moderate strength so that they can assist patients. Furthermore, they should be caring and want to help people who are not able to help themselves.

Advancement

Occupational therapy assistants may advance into administration positions. They might organize all the assistants in a large occupational therapy department or act as the director for a specific department such as sports medicine. Some assistants go on to teach classes in accredited occupational therapy assistant academic programs or lead health risk reduction classes for older adults.

Employment Trends

Employment is expected to grow much faster than average as demand for occupational therapy services rises and as occupational therapists increasingly use assistants and aides. Job prospects should be very good for occupational therapy assistants. Job seekers holding only a high school diploma might face keen competition for occupational therapy aide jobs.

Employment Change

Employment of occupational therapy assistants and aides is expected to grow 43% and 31% respectively from 2014 to 2024, much faster than the average for all occupations. In the short term, the impact of proposed federal legislation imposing limits on reimbursement for therapy services may adversely affect the job market for occupational therapy assistants and aides. Over the long term, however, demand for both will continue to rise because of the increasing number of individuals with disabilities or limited function.

The growing older adult population is particularly vulnerable to chronic and debilitating conditions that require therapeutic services. These patients often need additional assistance in their treatment, making the role of assistants and aides vital. As the large baby-boom generation ages, it enters the prime age bracket for heart attacks and strokes, further increasing the demand for cardiac and physical rehabilitation. In addition, future medical developments should permit an increasing percentage of trauma victims to survive, creating added demand for therapy services. An increase of sensory disorders in children will also spur demand for occupational therapy services.

Occupational therapists are expected to increase their utilization of assistants and aides to reduce the cost of occupational therapy services. Once a patient is evaluated and the therapist designs a treatment plan, the occupational therapy assistant can provide many aspects of treatment, as prescribed by the therapist.

Job Prospects

Opportunities for individuals interested in becoming occupational therapy assistants are expected to be very good. In addition to employment growth, job openings will result from the need to replace occupational therapy assistants and aides who leave the occupation permanently between 2014 and 2024. Occupational therapy assistants and aides with prior experience working in an occupational therapy office or other healthcare setting will have the best job opportunities. However, individuals with only a high school diploma may face keen competition for occupational therapy aide jobs. **TABLE 18.3** shows some projection data provided by the U.S. Department of Labor.

TABLE 18.3 Projections Data for Occupational Therapy Assistants and Aides, Occupational Therapy Assistants, and Occupational Therapy Aides, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Occupational therapy assistants and aides	41,800	58,700	16,800	40%
Occupational therapy assistants	33,000	47,100	14,100	43%
Occupational therapy aides	8,800	11,600	2,700	31%

Earnings

Median annual earnings of occupational therapy assistants were $56,950 in May 2014. The middle 50% earned between $46,170 and $68,450. The lowest 10% earned less than $36,420, and the highest 10% earned more than $76,790. Median annual earnings in the industries employing the largest numbers of occupational therapy assistants in May 2014 are included in TABLE 18.4.

Median annual earnings of occupational therapy aides were $26,550 in May 2014. The middle 50% earned between $20,750 and $33,030. The lowest 10% earned less than $18,330, and the highest 10% earned more than $44,240. Median annual earnings in the industries employing the largest numbers of occupational therapy aides in May 2014 are shown in TABLE 18.5.

Related Occupations

Occupational therapy assistants and aides work under the supervision and direction of occupational therapists. Other workers in the healthcare field who work under similar supervision include dental assistants; medical assistants; nursing, psychiatric, and home health aides; personal and home care aides; pharmacy aides; pharmacy technicians; and physical therapist assistants and aides.

Additional Information

For information on a career in occupational therapy and a list of accredited programs, contact:

- American Occupational Therapy Association, 4720 Montgomery Ln., P.O. Box 31220, Bethesda, MD 20824-1220. Internet: http://www.aota.org

For information about becoming certified as an occupational therapy assistant, contact

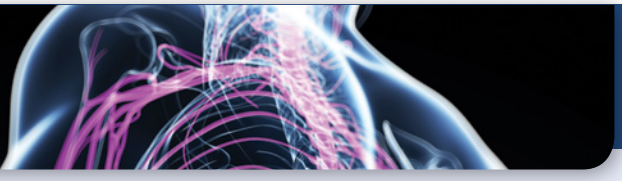
- National Board for Certification in Occupational Therapy, 12 South Summit Ave., Suite 100, Gaithersburg, MD 20877. Internet: http://www.nbcot.org

TABLE 18.4 Median Annual Earnings in the Industries Employing the Largest Numbers of Occupational Therapy Assistants, May 2014

Home healthcare services	$67,180
Offices of other health practitioners	$59,000
Nursing care facilities	$60,790
General medical and surgical hospitals	$50,970
Elementary and secondary schools	$46,800

TABLE 18.5 Median Annual Earnings in the Industries Employing the Largest Numbers of Occupational Therapy Aides, May 2014

Specialty (except psychiatric and substance abuse) hospitals	$29,020
General medical and surgical hospitals	$32,870
Offices of other health practitioners	$25,200
Elementary and secondary schools	$31,250
Nursing care facilities	$31,780



LEARNING PORTFOLIO

Issues for Discussion

1. Occupational therapists work with a wide variety of patients and need to know many areas within their discipline in order to assist those patients. Brainstorm with your classmates what those areas are and decide which area in particular might be most advantageous to know.
2. This chapter addresses three related roles within the occupational therapy profession. Discuss with your instructor and classmates which of these roles you would recommend to a friend or acquaintance to pursue and why.

Enrichment Activities:

1. View videos of occupational therapy students found at: http://www.aota.org/Education-Careers/Considering-OT-Career/CareerStories.aspx. Choose which video resonates with you and discuss the reason(s) behind that choice.
2. Many people assume the discipline of occupational therapy is rather new. Research the history and development of occupational therapy as a discipline. Create a timeline (whether a narrative piece, a poster, or an infographic) that describes the different stages of development and name significant individuals and organizations in the discipline.

References

1. Accreditation Council for Occupational Therapy Education. *Accredited Programs*. Internet: http://www.aota.org/Education-Careers/Find-School.aspx
2. National Board for Certification in Occupational Therapy. Internet: http://www.nbcot.org/
3. Accreditation Council for Occupational Therapy Education. *OTA Programs*. Internet: http://www.aota.org/Education-Careers/Find-School/AccreditEntryLevel/OTAPrograms.aspx
4. National Board for Certification in Occupational Therapy. Internet: http://www.nbcot.org/

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CHAPTER 19

Athletic Trainers and Exercise Physiologists*

Key Terms

American Association of Cardiovascular and Cardiopulmonary Rehabilitation (AACVPR)
American College of Sports Medicine (ACSM)
American Society of Exercise Physiologists (ASEP)
Athletic trainers
Athletic Trainers Strategic Alliance
Automated external defibrillator (AED)
Board of Certification, Inc. (BOC)
Bone injuries
Cardiac pulmonary resuscitation (CPR)
Cardiac rehabilitation program
Certified athletic trainer
Certified cardiac rehabilitation professional (CCRP)
Certified clinical exercise specialist (CES)
Certified personal trainer (CPT)
Commission on Accreditation of Athletic Training Education (CAATE)
Commission on Accreditation of Allied Health Education Programs (CAAHEP)
Committee on Accreditation for the Exercise Sciences (CoAES)
Communication skills
Exercise Physiologist, Certified (EPC)
Fitness and personal trainers
Injury prevention
Injury-preventive devices
Kinesiotherapist
Medical equipment
Muscle injuries
National Athletic Trainers' Association
National Collegiate Athletic Association (NCAA)
Physician practice manager
Primary care sports medicine physician
Recreational sports
Registered clinical exercise physiologist (RCEP)
Repetitive stress injuries
Spectator sports
Sports centers
Teacher's certificate, license
Third-party reimbursement
Work-related injuries

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

SPORTS MEDICINE—AN INTRODUCTION

Sports medicine is a broad discipline and an area of practice for many health professionals from a personal fitness trainer to a cardiac rehabilitation specialist[1]. Requirements to become a **certified personal trainer (CPT)** through the **American College of Sports Medicine (ACSM)** are a high school diploma and certification in **cardiac pulmonary resuscitation (CPR)** and the use of **automated external defibrillators (AEDs)**. Those meeting these requirements can sit for the CPT certification exam. In contrast, a master's degree is required to become a **certified athletic trainer** or a **registered clinical exercise physiologist (RCEP)**.[2]

Health professionals in sports medicine work with individuals of all ages who participate in physical activity as part of a healthy lifestyle or as a professional athlete. Athletic trainers focus on improving athletic performance or treating muscle or bone injuries. Clinical exercise physiologists develop and supervise exercise programs to improve functioning in individuals with heart, lung, orthopedic, or neuromuscular disease.[1] **Kinesiotherapists** use rehabilitative exercises, reconditioning, and physical education to treat patients who have problems moving in any way. **Primary care sports medicine physicians** may work for an athletic team or a university sports team or consult with athletic directors, coaches, and athletic trainers on injury prevention and treatment as well as enhancing performance[1].

Physicians, nurses, dietitians, exercise physiologists, and physical therapists are examples of health professionals that specialize in sports medicine by working in cardiac or pulmonary rehabilitation. Athletic trainers, physicians, and dietitians often work for a college or professional sports team.

For students interested in sports medicine there are many possibilities for a career depending on the preferred work environment and educational goals. The focus of this chapter is the athletic trainer and exercise physiologist.

ATHLETIC TRAINERS

Significant Points

- Although a bachelor's degree has been the minimum requirement for athletic trainers, 70% have a master's degree, and the minimum requirement for students entering the field after 2015 is a master's degree.
- Long hours, sometimes including nights and weekends, are common.
- Job prospects should be good in the healthcare industry and in high schools, but competition is expected for positions with professional and college sports teams.

Work Description

Athletic trainers help prevent and treat injuries for people of all ages and all skill levels. Their patients and clients include everyone from professional athletes to industrial workers. Recognized by the American Medical Association as allied health professionals, athletic trainers specialize in the prevention, diagnosis, assessment, treatment, and rehabilitation of **muscle injuries**, **bone injuries**, and illnesses (FIGURE 19.1). Athletic trainers, as one of the first healthcare providers on the scene when injuries occur, must be able to recognize, evaluate, and assess injuries, and provide immediate care when needed.

FIGURE 19.1 Athletic trainers specialize in treatment of bone and muscle injuries.
© Andresr/Shutterstock

Athletic trainers should not be confused with **fitness or personal trainers**, who are not healthcare workers, but rather train people to become physically fit. Athletic trainers try to prevent injuries by educating people on how to reduce their risk for injuries and advising them on the proper use of equipment. Athletic trainers instruct athletes in exercises to improve balance and strength and in home exercises and therapy programs. They also help apply protective or **injury-preventive devices** such as tape, bandages, and braces (FIGURE 19.2).

FIGURE 19.2 Athletic trainers use devices to prevent elbow injury.
© Robert Kneschke/Shutterstock

Athletic trainers may work under the direction of a licensed physician and in cooperation with other healthcare providers. The extent of the direction ranges from discussing specific injuries and treatment options with a physician to performing evaluations and treatments as directed by a physician. Some athletic trainers meet with the team physician or consulting physician once or twice a week; others interact with a physician every day. Athletic trainers often have administrative responsibilities including keeping records and writing reports on injuries and treatment programs for athletes and other clients. Other duties may include regular meetings with an athletic director, **physician practice manager**, or other administrative officer to deal with budgets, purchasing, policy implementation, and other business-related issues.

Work Environment

Many athletic trainers work in educational facilities, such as secondary schools or colleges. Others may work in physicians' offices or for a wide variety of professional sports teams—baseball, football, basketball, and ice hockey. Some athletic trainers work in rehabilitation and therapy clinics, in the military, or with performing artists such as ballet dancers or figure skaters (FIGURE 19.3).

The industry and individual employer are significant in determining the work environment of athletic trainers. Many athletic trainers work indoors most of the time; others, especially those in some sports-related jobs, spend much of their time working outdoors. The job also might require standing for long periods, working with **medical equipment**, and being able to walk, run, kneel, stoop, or crawl. Travel out of town for competitive events is often required.

Schedules vary by work setting. Athletic trainers in non-sports settings generally have an established schedule—usually about 40 to 50 hours per week—with nights and weekends off. Athletic trainers working in hospitals and clinics may spend part of their time working at other locations doing outreach services. The most common outreach programs include conducting athletic training services and speaking at high schools, colleges, and commercial businesses.

Athletic trainers in sports settings have schedules that are longer and more variable. These athletic trainers must be present for team practices and competitions, which often are on evenings and weekends, and their schedules can change on short notice when games and practices have to be rescheduled. In high schools, athletic trainers who also teach may work 60 to 70 hours a week, or more. In **National Collegiate Athletic Association (NCAA)** Division I colleges and universities, athletic trainers generally work with one team; when that team's sport is in season, working at least 50 to 60 hours a week is common. Athletic trainers in Division II or III, representing smaller colleges and universities, often work with several teams and have teaching responsibilities. During the off-season, a 40- to 50-hour work week may be normal in most settings. Athletic trainers for professional sports teams generally work the most hours per week. During training camps, practices, and competitions, they may be required to work up to 12 hours a day.

There is some stress involved with being an athletic trainer. The work of athletic trainers requires frequent interaction with others. They consult with physicians as well as have frequent contact with athletes and patients to discuss and administer treatments, rehabilitation programs, **injury prevention** practices, and other health-related issues. Athletic trainers are responsible for their clients' health and sometimes have to make quick decisions that could affect the health or career of their clients. Athletics trainers also can be affected by the pressure to win, which is typical of competitive sports teams.

FIGURE 19.3 Athletic trainer evaluating injury of a ballet dancer.
© Nanette Grebe/Shutterstock

Employment Opportunities

Athletic trainers held about 25,400 jobs in 2014 and are found in every part of the country. Most athletic trainer jobs are related to sports, although an increasing number also work in non-sports settings. The majority of athletic trainers work either in educational settings including colleges, universities, and middle and high schools or in the offices of other health professionals. About 11% work in fitness and **recreational sports** centers and only 5% work for spectator sports teams.

Education and Legal Requirements

Athletic trainers need at least a master's degree from an accredited college or university. The degree program includes both classroom and clinical components, including science and health-related courses. Many athletic trainers hold a master's or doctoral degree. In 2015, 49 states and the District of Columbia required athletic trainers to be licensed or hold some form of registration.[3]

Education and Training

Although a bachelor's degree from an accredited college or university has been required for a job as an athletic trainer, in 2015 the **Athletic Trainers Strategic Alliance** made the decision to require a master's degree for all entry-level athletic trainers.[4] Students in these programs are educated both in the classroom and in clinical settings. Formal education includes many science and health-related courses, such as human anatomy, physiology, nutrition, and biomechanics. The **Commission on Accreditation of Athletic Training Education (CAATE)** accredits athletic trainer programs, as well as post-professional and residency athletic trainer programs. Athletic trainers will need a higher degree to be eligible for some positions, especially those in colleges and universities, and to increase their advancement opportunities. Because some positions in high schools involve teaching along with athletic trainer responsibilities, a **teaching certificate or license** could be required.

Licensure and Certification

Athletic trainers must be licensed or certified in the majority of states. In 2015, 49 states required athletic trainers to be licensed or registered; this requires certification from the **Board of Certification, Inc. (BOC)**.[3] For BOC certification, athletic trainers need a master's degree from a CAATE-accredited program and must pass the rigorous BOC examination. To retain certification, credential holders must continue taking medical-related courses and adhere to the BOC standards of practice. In California, where licensure is not required, certification is voluntary but may be helpful for those seeking jobs and advancement.[3]

Other Qualifications

Because all athletic trainers deal directly with a variety of people, they need good social and **communication skills**. They should be able to manage difficult situations and the stress associated with them, such as when disagreements arise with coaches, patients, clients, or parents regarding suggested treatment. Athletic trainers also should be organized, be able to manage time wisely, be inquisitive, and have a strong desire to help people.

Advancement

There are a few ways for athletic trainers to advance. Some athletic trainers advance by switching teams or sports to gain additional responsibility or pay. Assistant athletic trainers may become head athletic trainers and, eventually, athletic directors or physician, hospital, or clinic practice administrators where they assume a management role. Some athletic trainers move into sales and marketing positions, using their expertise to sell medical and athletic equipment. Athletic trainers working in colleges and universities may pursue an advanced degree to increase their advancement opportunities.

Employment Trends

Employment is projected to grow much faster than average. Job prospects should be good in the healthcare industry and in high schools, but competition should be expected for positions with professional and college sports teams.

Employment Change

Employment of athletic trainers is projected to grow 21% from 2012 to 2024, much faster than the average for all occupations, because of their role in preventing injuries and reducing healthcare costs. However, because it is a small occupation, the fast growth will result in only about 5,400 new jobs over the 10-year period. In 2014, the majority of athletic trainers worked for colleges and university sports teams and in offices of other health practitioners. (TABLE 19.1).

As people become more aware of sports-related injuries at a young age, demand for athletic trainers is expected to increase. Recent research reveals that the effects of concussions are particularly severe and long-lasting in child athletes. Although concussions are dangerous to athletes at any age, children's brains are still developing and are at risk for permanent complications.

Parents and coaches are becoming educated about these greater risks through community health efforts. Because athletic trainers are usually onsite with athletes and are often the first responders when injuries occur, the demand for trainers should continue to increase. Additionally, advances in injury prevention and detection and more sophisticated treatments are projected to increase the demand for athletic trainers. Growth in an increasingly active middle-aged and older adult population will likely lead to an increased incidence of athletic-related injuries, such as sprains. Sports programs at all ages and for all experience levels will continue to create demand for athletic trainers.

Insurance and workers' compensation costs have become a concern for many employers and insurance companies, especially in areas where employees are often injured on the job. For example, military bases hire athletic trainers to help train and rehabilitate injured military personnel. These trainers also create programs aimed at keeping injury rates down. Depending on the state, some insurance companies

TABLE 19.1 Industries Employing the Largest Numbers of Athletic Trainers, 2014

Educational services	37%
Ambulatory healthcare	26%
Hospitals	13%
Fitness and recreational centers	11%
Spectator sports	5%

Professional Profiles

Name: Cat, MS, ATC, LAT
Title: Athletic Trainer
Education: MS in Athletic Training, BS in Exercise Science

Q: Describe your job and organization.

A: I work as clinical athletic trainer in a busy outpatient, sports medicine and orthopedic physical therapy clinic in an urban setting. The clinic has about 400 patient visits per week, ranging from children to professional athletes to the geriatric population. Also, I provide medical coverage for sporting events in the city for another employer.

Q: Describe a typical work day.

A: At the beginning of the day, I meet with the physical therapist overseeing the care of patients and athletes to discuss any updates and new treatment options. I check in with each patient as they are doing their exercises to ensure that they are following the correct form and to maximize the effectiveness of their therapeutic program. I provide 15 to 25 minutes of manual therapy for each patient to ensure that they understand which exercises to do at home and to evaluate their ability to complete activities of daily living.

Q: Why did you choose this profession?

A: I was drawn to this profession being a former athlete. I enjoy working with those who are active and motivated and can't get enough of the fast-paced nature of sports medicine. There is constantly something new to learn and integrate into my practice. I enjoy interacting with the wide variety of athletes and patients and learning from physicians and orthopedic surgeons. I also value the reflection and growth required of me as a professional.

Q: Is there room for advancement in this field?

A: There is plenty of room for advancement for athletic trainers. Most entry-level positions are for an assistant athletic trainer. Advancement can be to specialize in a specific age group, sport, or athletic team or as the head athletic trainer.

Q: Name and explain what part of your academic training most prepared you for this profession.

A: Students take part clinical rotations in various settings under the supervision, guidance, and mentorship of certified athletic trainers. Realistic and hands-on practice helps solidify techniques and critical-thinking skills before entering the professional world. The real-world practice builds the confidence to perform the job correctly and safely.

Q: What do you wish you would have known in high school or college about pursuing this career?

A: I wish I had known all of the possible work settings for athletic trainers in addition to the well-known team-based or school setting. I would have gained experience in as many settings as possible and avoided becoming discouraged about not working in what I thought were the most desired settings.

Q: What advice would you give someone who is considering this career?

A: I would recommend researching all health fields before making a decision, especially within the field of sports medicine. To be effective in this field, athletic trainers must be able to remain calm and think on their feet during emergency treatments, be creative and able to tailor unique rehab programs for patients, and be able to prioritize time and responsibilities. It is also critical to communicate the needs of the athlete to the family, physician, and physical therapist as well as the athlete. Desirable qualities for athletic trainers are to be outgoing, adaptable, hardworking, and empathetic with a genuine concern for people and to have a desire to continue learning.

TABLE 19.2 Projections Data for Athletic Trainers, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Athletic trainers	25,400	30,800	5,400	21%

recognize athletic trainers as healthcare providers and reimburse the cost of an athletic trainer's services.

Job Prospects

Future job growth will be concentrated in the healthcare industry, including hospitals and offices of health practitioners. Fitness and recreation **sports centers** also will provide new jobs, as these establishments grow and continue to need additional athletic trainers to provide support for their clients. Growth in positions with sports teams will be somewhat slower, however, as most professional sports clubs and colleges and universities already have complete athletic training staffs. TABLE 19.2 shows some projection data from the National Employment Matrix.

In some states, efforts are under way to have an athletic trainer in every high school to work with student-athletes, which may lead to growth in the number of athletic trainers employed in high schools. In addition, as more young athletes specialize in certain sports, there is increasing demand for athletic trainers to deal with **repetitive stress injuries**.

The demand for health care, with an emphasis on preventive care, should grow as the population ages and as a way to reduce healthcare costs. Increased licensure requirements and regulation has led to a greater acceptance of athletic trainers as qualified healthcare providers. As a result, **third-party reimbursement** is expected to continue to grow for athletic training services. Athletic trainers will benefit from this expansion because they provide a cost-effective way to increase the number of health professionals in an office or other setting.

As athletic trainers continue to expand their services, more employers are expected to use these workers to reduce healthcare costs by preventing **work-related injuries**. Athletic trainers can help prevent injuries and provide immediate treatment for many injuries that do occur. For example, some athletic trainers may be hired to increase the fitness and performance of police and firefighters.

Job Prospects

Job prospects should be good for athletic trainers in the healthcare industry and in high schools. Those looking for a position with a professional or college sports team may face competition. Because of relatively low turnover, the settings with the best job prospects will be the ones that are expected to have the most job growth, primarily positions in the healthcare and fitness and recreational sports centers industries. Additional job opportunities may arise in elementary and secondary schools as more positions are created. Some of these positions also will require teaching responsibilities.

There are relatively few positions for professional and collegiate sports teams in comparison to the number of applicants. Turnover among professional sports teams' athletic trainers is also limited. Many athletic trainers prefer to continue to work with the same coaches, administrators, and players when a good working relationship already exists.

There also are opportunities for athletic trainers to join the military, although they would not be classified as athletic trainers. Instead, the U.S. Department of Veterans Affairs (VA) facilities hire kinesiotherapists (described later in this chapter) in physical reconditioning units for current and former military personnel with physical injuries.[5] Enlisted soldiers and officers who are athletic trainers are usually placed in another program, such as health educator or training specialist, in which their skills are useful.

This occupation is expected to continue to change over the next decade, including more administrative responsibilities, adapting to new technology, and working with larger populations; job seekers must be prepared to adapt to these changes.

Earnings

The median annual wage was $43,370 for athletic trainers in May 2014. Most athletic trainers work in full-time positions and typically receive benefits. The salary of an athletic trainer depends on experience and job responsibilities, and varies by job setting. Many employers pay for some of the continuing education required for athletic trainers to remain certified, although the amount covered varies from employer to employer.

Related Occupations

Other allied health professionals with job duties similar to athletic trainers include chiropractors, emergency medical technicians (EMTs) and paramedics, licensed practical and licensed vocational nurses, massage therapists, occupational therapists, physical therapists, physician assistants, podiatrists, recreational therapists, registered nurses, and respiratory therapists.

EXERCISE PHYSIOLOGISTS

Significant Points

- A bachelor's degree is the minimum requirement for a certified exercise physiologist; a master's degree is required for a registered clinical exercise physiologist.

- Since exercise physiology is a small and relatively new profession, there is strong competition for jobs.
- Most exercise physiologists are employed in hospitals or in offices of other health professionals.
- Greater emphasis on exercise as part of preventing and treating chronic diseases, especially cardiovascular disease, diabetes, and obesity, is expected to increase the demand for exercise physiologists.

Work Description

Exercise physiologists work to improve overall patient health. Many of their patients suffer from health problems such as diabetes, cardiovascular disease, and pulmonary disease or are obese. For patients with these conditions, exercise is medical treatment much the same as surgery and prescription drugs are medical treatment for other diseases. These professionals provide health education and develop exercise plans to reduce risk for disease by improving key health indicators such as blood pressure, blood cholesterol, and blood glucose.

Exercise physiologists review the patient's medical history, perform fitness tests and monitor body fat, blood pressure, and oxygen usage to determine the best exercise and fitness program. For those working in a **cardiac rehabilitation program** the exercise physiologist will monitor patients during testing and during exercise to ensure patient safety (**FIGURE 19.4**).

Exercise physiologists work closely with primary physicians to achieve goals for improving the health status of each patient.

Work Environment

The majority of exercise physiologists work in hospitals and offices of other healthcare professionals and outpatient clinics. They also work in athletic training settings in colleges and universities, fitness facilities, corporate wellness programs, military training centers, and rehabilitation clinics and hospitals. Some may be employed as sports directors, coaches, or trainers for athletic programs or corporate wellness directors or program coordinators, exercise managers in fitness facilities, or rehabilitation specialists. Exercise physiologists are hired to assist in the development of athletic equipment and gear. Others may work as sports or athletic performance consultants. Most physiologists work full time; however, about two out of five exercise physiologists worked part time.

Employment Opportunities

Exercise physiologists held about 14,500 jobs in 2014. This is a small occupation, and compared to athletic trainers, licensure for exercise physiologists is less common and therefore there are fewer recognized standards of practice for exercise physiologists.

Education and Legal Requirements

The **Committee on Accreditation for the Exercise Sciences (CoAES)**, a subcommittee of the **Commission on Accreditation of Allied Health Education Programs (CAAHEP)**, guides educational programs in ensuring that accreditation requirements are met. CAAHEP accredits both bachelor- and master-level programs; there are 43 bachelor-level exercise science and seven master-level exercise physiology programs in the United States.[6] In addition, the **American Society of Exercise Physiologists (ASEP)** accredits programs in exercise physiology.

FIGURE 19.4 Exercise physiologists monitor patients during testing.
© Lisa F. Young/Shutterstock

Education and Training

Exercise physiologists need at least a bachelor's degree from an accredited college or university in exercise science, exercise physiology, or kinesiology. Master's degree programs are also common, and over 50% of exercise physiologists have a master's degree. Degree programs have classroom and clinical components, including science and health-related courses, such as biology, anatomy, physiology, and nutrition. An internship provides hands-on experience developing and monitoring exercise programs.

Licensure and Certification

Only Louisiana requires exercise physiologists to be licensed, although many states have pending legislation to create formal licensure requirements. The American Society of Exercise Physiologists (ASEP) offers the **Exercise Physiologist, Certified (EPC)** certification that physiologists can use to demonstrate their qualifications. Certification requires graduation with a relevant bachelor's degree and coursework and successfully completing the ASEP exam. The exam includes academic knowledge as well as hands-on laboratory and practical

skills. Maintaining certification requires continuing education courses every five years. The **American College of Sports Medicine (ACSM)** also offers certifications for exercise physiologists. ACSM offers the **Certified Clinical Exercise Specialist (CES)** credential for candidates with bachelor's degrees and the **Registered Clinical Exercise Physiologist (RCEP)** credential for those with a master's degree in exercise physiology. Both credentials require practical clinical experience.[2] Exercise physiologists with a goal of working for college or university athletic departments are advised to obtain certification or registration through ACSM, as these are recognized by the NCAA.

Exercise physiologists can sit for an exam to become a **certified cardiac rehabilitation professional (CCRP)** through the **American Association of Cardiovascular and Cardiopulmonary Rehabilitation (AACVPR)**. The requirements are a minimum of a bachelor's degree in a health-related field and clinical experience in cardiac rehabilitation. However, most exercise physiologists that work in cardiac rehab have a master's degree.[7]

Other Qualifications

Exercise physiologists need to feel comfortable working with people who have a variety of chronic health problems as well as those who are healthy with a goal of achieving maximum physical performance. Good listening skills are important to be able to assess a client's motivation and response to an exercise program. Being able to present clear instructions on an exercise program to individual clients and in a group setting are necessary. Since many exercise physiologists are managers of wellness and rehabilitation programs, they must be organized and detail oriented in order to maintain detailed clinical records of clients and to provide reports to the client's physician.

Advancement

Exercise physiologists with some business training have better opportunities to advance into management positions, such as the director of a rehabilitation program or manager of a wellness program.

Employment Trends

Employment opportunities in exercise physiology are expanding as doctors, patients, and society learn of the value of exercise as an important healthcare treatment. Certifications by both the American Society of Exercise Physiologists and the American Society for Sports Medicine increase the credibility of exercise physiologists as part of the healthcare team.

Employment Change

Employment of exercise physiologists is projected to grow 14% from 2014 to 2024, faster than average for all occupations. Demand may rise with greater emphasis on preventive health as a result of the Affordable Care Act and as health insurance coverage includes exercise and other preventive measure to reduce the incidence of chronic diseases. There are few available exercise physiologist positions, so competition for work remains high. The majority of exercise physiologists work in hospitals or in the offices of other health professionals (TABLE 19.3).

Job Prospects

Demand for exercise physiologists may rise as hospitals emphasize exercise and preventive care as part of their treatment for chronic diseases and long-term rehabilitation. The need for exercise physiologists in residential housing for seniors offers new job opportunities because older adults frequently have diseases that would benefit from a structured exercise program. A master's degree is usually required for exercise physiologists to work in cardiac rehabilitation programs. There are few available exercise physiologist positions, so competition for work remains high. TABLE 19.4 shows some projection data from the National Employment Matrix.

Earnings

The median annual wage for exercise physiologists was $46,270 in May 2014. The lowest 10% earned less than $31,700, and the top 10% earned $73,010. Exercise physiologists working in hospitals earn more than those working in offices of other health professionals. Managers or coordinators of wellness programs or a rehabilitation specialist with a master's degree can expect higher salaries.

Related Occupation

Health professionals that require similar education and training and those who do similar work are chiropractors, EMTs and paramedics, occupational therapists, physical therapists, physician's assistants, podiatrists, registered nurses, and respiratory therapists.

Kinesiotherapist

A health career similar to that of an athletic trainer is a kinesiotherapist. Formerly called corrective therapy, kinesiotherapy is the study of body-movement mechanics. This career started in 1946 after World War II in response to the needs of soldiers returning to active duty after injury or illness.[7] Kinesiotherapists use rehabilitative exercise, reconditioning, and physical education to treat patients who have problems moving in any way. Physical reconditioning units are primarily in VA hospitals.

TABLE 19.3 Facilities Employing the Largest Numbers of Exercise Physiologists, 2014

Hospitals	27%
Ambulatory healthcare	10%
Federal government	3%

Data from: Bureau of Labor Statistics. U.S. Department of Labor. *Occupational Employment and Wages — May 2014*. Internet: http://www.bls.gov/oes/#data

TABLE 19.4 Projections Data for Exercise Physiologists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Exercise physiologists	14,500	16,000	1,500	11%

Kinesiotherapists apply the principles, tools, techniques, and psychology of medically oriented physical education to help persons with physical and mental problems meet their treatment goals. 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 muscle coordination. Therapists teach exercise routines to patients who use wheelchairs, 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 developmentally disabled, therapists use exercises to relieve frustration or tension, or to bring about social involvement.

The work setting of kinesiotherapists depends on the type of care; for example, aquatic therapy takes place in pools, and therapy for patients receiving psychiatric care is often provided in hospitals. In clinics, hospitals, and other settings, they may have standard, 9-to-5 hours and work entirely onsite. Homecare kinesiotherapists travel to visit their patients instead of working in a fixed location.[5] They work a 40-hour week, usually in an indoor setting, although outdoor recreation areas and pools are also used. A variety of physical demands are involved in being a kinesiotherapist, including demonstrating exercises and equipment use, lifting and balancing patients, and handling and adjusting therapeutic exercise equipment.

There are only three undergraduate programs accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), although a master's degree in exercise science is another route to becoming a kinesiotherapist. Registration with the American Kinesiotherapy Association requires a minimum of a bachelor's degree with an internship and successful completion of a qualifying exam.[6] An internship may include rotations in neurology, orthopedics, pediatrics, geriatrics, and cardiac rehabilitation and wellness programs.

Since kinesiotherapists work primarily in VA facilities, most are federal employees. They generally work at the GS-7 to GS-12 level, which had base pay of $34,319 and $60,877, respectively, in 2014.[5]

ADDITIONAL INFORMATION

For more information about careers in sports medicine:

- American Dental Education Association. *Sports Medicine Overview*. Explore Health Careers. Org. Internet: http://explorehealthcareers.org/en/Field/27/Sports_Medicine

For information about ensuring the health and safety of college athletes:

- National Collegiate Athletic Association, 700 W. Washington Street, P.O. Box 6222, Indianapolis, IN 46206. Internet: http://www.ncaa.org/health-and-safety

For information on accredited programs in athletic training, contact:

- Commission on Accreditation of Athletic Trainers Education (CAATE). 6850 Austin Center Blvd, Suite 100, Austin, TX 78731. Internet: http://caate.net/
- **National Athletic Trainers' Association** (NATA), 2952 Stemmons Freeway, Suite 200, Dallas, TX 75247. Internet: http://www.nata.org

For information on certification of athletic trainers, contact:

- Board of Certification, Inc., 1415 Harney St., Suite 200, Omaha, NE 68102. Internet: http://bocatc.org/

For further information on accredited programs in exercise physiology:

- American Society for Exercise Physiologists. Internet: https://www.asep.org/
- Commission on Accreditation of Allied Health Education Programs, 1361 Park Street, Clearwater, FL 33756. Internet: www.caahep.org/

For further information on certification and registration as an exercise physiologist:

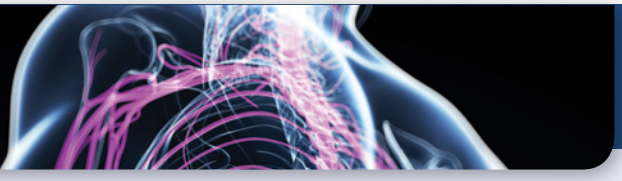
- American College of Sports Medicine, 401 West Michigan Street, Indianapolis, IN 46202. Internet: http://www.acsm.org/

For information on certification in cardiac rehabilitation:

- American Association of Cardiovascular and Pulmonary Rehabilitation, 330 N. Wabash Avenue, Suite 2000, Chicago, IL 60611. Internet: https://www.aacvpr.org/Certification/

For information on kinesiotherapy:

- American Kinesiotherapy Association, 118 College Drive, #5142, Hattiesburg, MS 39406. Intenet: http://akta.org/



LEARNING PORTFOLIO

Issues for Discussion

1. Compare the educational requirements and usual work settings of a certified personal trainer, certified athletic trainer, and registered clinical exercise physiologist. Which of these career paths is most appealing to you and why?
2. View the video, *AACVPR and LSI featured on Discovery Channel!* (Internet: https://www.youtube.com/watch?v=40RZtEFeCgo. Learn more about the role of cardiac rehabilitation. Which patients are referred to a cardiac rehab program? What are the benefits for patients who participate in a cardiac rehab program?
3. View the video from the American College of Sports Medicine, *ASCM Certification* (Internet: http://certification.acsm.org/acsm-registered-clinical-exercise-physiologist); then view the video from the American College of Sports Medicine, *ASCM Certification (Exercise Physiologist)* (Internet: http://certification.acsm.org/acsm-certified-exercise-physiologist). How do the requirements for a certified clinical exercise physiologist differ from the requirements of a registered clinical exercise physiologist?
4. Discuss the role of the National Collegiate Athletic Association (Internet: http://www.ncaa.org) in ensuring the safety of college and university athletes.

Enrichment Activities

1. View the video from the National Athletic Trainers' Association, *Advocacy Video: Unsung Heroes of Sports Medicine* (Internet: https://vimeo.com/47686550). How do physicians work with athletic trainers?
2. View the video, *Kinesiotherapy Specialties and Disciplines*. Which examples represent evaluation and treatment to return to work or to be able to live independently at home? Internet: http://certification.acsm.org/acsm-certified-exercise-physiologist
3. Go to the webpage for the American College of Sports Medicine and identify different certifications available (Internet: http://certification.acsm.org/get-certified). What are the advantages of becoming certified in a specialty area?

References

1. American Dental Education Association. *Sports Medicine Overview*. Explore Health Careers.org. Internet: http://explorehealthcareers.org/en/Field/27/Sports_Medicine
2. American College of Sports Medicine. *ACSM Certification*. Internet: http://certification.acsm.org/acsm-registered-clinical-exercise-physiologist
3. Board of Certification for the Athletic Trainer. *State Regulatory News*. Internet: http://www.bocatc.org/state-regulation/state-regulatory-news
4. AT Strategic Alliance. *Strategic Alliance Degree Announcement: CAATE*. Internet: http://caate.net/athletic-training-degree/
5. Green, K. You're a What? Kinesiotherapist. *Career Outlook*. December 2014. U.S. Department of Labor. Internet: http://www.bls.gov/careeroutlook/2014/youre-a-what/kinesiotherapist.htm
6. Commission on Accreditation of Allied Health Education Programs. *CAAHEP Accredited Program Search*. Internet: http://www.caahep.org/Find-An-Accredited-Program/
7. American Association of Cardiovascular and Cardiopulmonary Rehabilitation. *About the CCRP*. Internet: https://www.aacvpr.org/Certification/AACVPR-Professional-Certification
8. American Kinesiotherapy Association. *History*. Internet: http://akta.org

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CHAPTER 20

Mental Health Professionals*

Key Terms

Anorexia nervosa
Behavioral disorder counselors
Binge-eating disorders
Bulimia nervosa
Clinical psychologists
Counseling psychologists
Developmental psychologists
Economic effectiveness
Educational psychologists
Employee assistance program (EAP)
Engineering psychologists
Experimental or research psychologists
Geropsychologists
Health psychologists
Industrial psychologists
Mental health
Neuropsychologists
Obesity
Personnel psychologists
Psychological variables
Psychology
Psychometric psychologists
Rehabilitation psychologists
School psychologists
Social psychologists
Substance abuse counselors

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

INTRODUCTION

Numerous stressors are part of everyday life; these stressors sometimes affect an individual's well-being. Treating these stressors by way of medical care alone does not always result in the best outcome for an individual. Promoting mental and psychological well-being falls within the responsibility of mental health professionals, such as those involved with psychology, substance abuse counseling, and behavioral disorder counseling. These professionals work with patients to prevent, diagnose, and treat mental disorders. Combined with the work of fellow healthcare professionals, mental health professionals work to bring the patient to a place in life of total health, so that the patient can use both cognitive and emotional capabilities to function in society and meet the demands of everyday life.

PSYCHOLOGISTS

Significant Points

- About 34% of psychologists are self employed, mainly as private practitioners and independent consultants.
- Employment growth will vary by specialty, for example, clinical, counseling, and school psychologists will have 20% growth; industrial-organizational psychologists, 19% growth; and 10% growth is expected for all other psychologists.
- Acceptance to graduate psychology programs is highly competitive.
- Job opportunities should be the best for those with a doctoral degree in a subfield, such as health; those with a master's degree will have good prospects in industrial-organization psychology; bachelor's degree holders will have limited prospects.

Psychologists study the human mind and human behavior. Psychology examines both normal and abnormal aspects of human behavior. **Psychology** refers to 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 various 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.

Psychology Book titles.
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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 work in mental health and rehabilitation centers, hospitals, and private practice providing counseling and therapy to persons suffering emotional or adjustment problems. Because psychology is basically a science, the psychologist is often the most knowledgeable member among mental health team members regarding 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 contributes 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.

A psychologist may also design, develop, and evaluate materials and procedures in order to resolve problems in educational and training programs. In addition, psychologists employ scientific techniques to deal with problems of motivation and morale in the work setting. Psychologists design and conduct experiments and analyze the results in an effort 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 specializations that an individual can consider when planning a career.

These include clinical psychology, counseling psychology, developmental psychology, educational psychology, engineering psychology, personnel psychology, experimental psychology, industrial psychology, psychometric psychology, rehabilitation psychology, school psychology, 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 apply 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 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 health-oriented 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 subsequent 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 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. This type of counseling primarily emphasizes 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 counseling 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 the 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 the 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 their professional knowledge and skills to the hiring, assignment, and promotion of employees in order to increase productivity and job satisfaction. These psychologists place great emphasis on data gathered from tests and interviews, and apply the techniques of other psychological specialties, such as experimental, developmental, and psychometric, 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 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 directly measure 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.

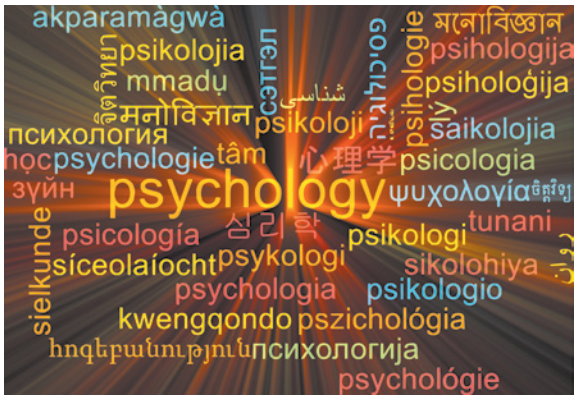
Experimental or research psychologists work in university and private research centers and in business, nonprofit, and governmental organizations. They study the behavior of both human beings and animals such as rats, monkeys, and pigeons. Prominent areas of study in experimental and research psychology include motivation, thought, attention, learning and memory, sensory and perceptual processes, and the effects of substance abuse. Research and experimental psychologists also study genetic and neurological factors affecting behavior.

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 healthcare 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.



Psychology in multiple languages.
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Employment Opportunities

Psychologists held about 173,900 jobs in 2014. Educational institutions employed about 25% of psychologists in positions other than teaching, such as counseling, testing, research, and administration. About 15% were employed in health care, primarily in offices of mental health practitioners, hospitals, physicians' offices, and outpatient mental health and substance abuse centers. Government agencies at the state and local levels employed psychologists in correctional facilities, law enforcement, and other settings.

After several years of experience, some psychologists—usually those with doctoral degrees—enter private practice or set up private research or consulting firms. About one-third of psychologists were self employed in 2014, compared with only 8% of all professional workers.

In addition to the previously mentioned jobs, many psychologists held faculty positions at colleges and universities and as high school psychology teachers.

Educational and Legal Requirements

A master's or doctoral degree and a license are required for most psychologists.

Education and Training

A doctoral degree usually is required for independent practice as a psychologist. Psychologists with a PhD or Doctor of Psychology (PsyD) qualify for a wide range of teaching, research, clinical, and counseling positions in universities, healthcare services, elementary and secondary schools, private industry, and government. Psychologists with a doctoral degree often work in clinical positions or in private practice,

but they also sometimes teach, conduct research, or carry out administrative responsibilities.

A doctoral degree generally requires about five years of graduate study, culminating 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 PsyD degree may be based on practical work and examinations rather than a dissertation. In clinical, counseling, and school psychology, the requirements for the doctoral degree include an internship of at least one year.

A specialist degree or its equivalent is required in most states for an individual to work as a school psychologist, although a few states still credential school psychologists with master's degrees. A specialist (EdS) degree in school psychology requires a minimum of two years of full-time graduate study (at least 60 graduate semester hours) and a one-year full-time internship during the third year. In professional practice, school psychologists address both the educational and the mental health components of students' development; as a consequence, their training includes coursework in both education and psychology.

People with a master's degree in psychology may work as industrial-organizational psychologists. They also may work as psychological assistants under the supervision of doctoral-level psychologists and may conduct research or psychological evaluations. A master's degree in psychology requires at least two years of full-time graduate study. Degree requirements usually include practical experience in an applied setting and a master's thesis based on an original research project.

Competition for admission to graduate psychology programs is keen. Some universities require applicants to have an undergraduate major in psychology. Others prefer only coursework in basic psychology with additional courses in statistics, mathematics, and the biological, physical, and social sciences.

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. Bachelor's degree holders may also work as research or administrative assistants for psychologists. Some work as technicians in related fields, such as marketing research. Many find employment in other areas, such as sales, service, or business management.

In the federal government, candidates having at least 24 semester hours in psychology and one course in statistics qualify for entry-level positions. However, competition for these jobs is keen because this is one of the few ways in which one can work as a psychologist without an advanced degree.

The American Psychological Association (APA) presently accredits doctoral training programs in clinical, counseling, and school psychology, as well as institutions that provide internships for doctoral students in school, clinical, and counseling psychology.[1] The National Association of School Psychologists, with the assistance of the National Council for Accreditation of Teacher Education, helps to approve advanced degree programs in school psychology.[2]

Licensure

Psychologists in independent practice or those who offer any type of patient care—including clinical, counseling, and school psychologists—must meet certification or licensing requirements in all states and the District of Columbia. Licensing laws vary by state and by type of position, but require licensed or certified psychologists to limit their practice to areas in which they have developed professional competence through training and experience. Clinical and counseling psychologists usually need a doctorate in psychology, an approved internship, and one to two years of professional experience. In addition, all states require that applicants pass an examination. Most state licensing boards administer a standardized test, and many supplement that with additional oral or essay questions. Some states require continuing education for renewal of the license.

The National Association of School Psychologists (NASP) awards the Nationally Certified School Psychologist (NCSP) designation, which recognizes professional competency in school psychology at a national level. Currently, 31 states recognize the NCSP and allow those with the certification to transfer credentials from one state to another without taking a new certification exam. In states that recognize the NCSP, the requirements for certification or licensure and those for the NCSP often are the same or similar. Requirements for the NCSP include the completion of 60 graduate semester hours in school psychology; a 1,200-hour internship, 600 hours of which must be completed in a school setting; and a passing score on the National School Psychology Examination.[3]

Other Qualifications

Aspiring psychologists who are interested in direct patient care must be emotionally stable, mature, and able to deal effectively with people. Sensitivity, compassion, good communication skills, and the ability to lead and inspire others are particularly important qualities for people wishing to do clinical work and counseling. Research psychologists should be able to do detailed work both independently and as part of a team. Patience and perseverance are vital qualities, because achieving results in the psychological treatment of patients or in research may take a long time.

Certification and Advancement

The American Board of Professional Psychology (ABPP) recognizes professional achievement by awarding specialty certification in 15 different areas, such as psychoanalysis, rehabilitation, forensic, group, school, clinical health, and couple and family.[4] Candidates for ABPP certification must meet general criteria that consist of a doctorate in psychology, as well as state licensure. Each candidate must then meet additional criteria of the specialty field, which is usually a combination of

postdoctoral training in their specialty, several years of experience, and professional endorsements, as determined by the ABPP. Applicants are then required to pass the specialty board examination. Psychologists can improve their advancement opportunities by earning an advanced degree and by participation in continuing education. Many psychologists opt to start their own practice after gaining experience working in the field.

Employment Trends

As fast-as-average employment growth is expected for psychologists, including industrial-organizational psychologists, whose employment numbers are expected to rise by 19% through 2024. Job prospects should be best for people who have a doctoral degree from a leading university in an applied specialty, such as counseling or health, and people with a specialist or doctoral degree in school psychology. Master's degree holders in fields other than industrial-organizational psychology will face keen competition. Opportunities will be limited for bachelor's degree holders.

Employment Change

Employment of psychologists is expected to grow 19% from 2014 to 2024, faster than the average for all occupations. Employment will grow because of increased demand for psychological services in schools, hospitals, social service agencies, mental health centers, substance abuse treatment clinics, consulting firms, and private companies.

Employment growth will vary by specialty. Growing awareness of how students' mental health and behavioral problems, such as bullying, affect learning will increase demand for school psychologists to offer student counseling and mental health services.

The rise in healthcare costs associated with unhealthy lifestyles, such as smoking, alcoholism, and obesity, has made prevention and treatment more critical. An increase in the number of employee assistance programs, which help workers deal with personal problems, also should lead to employment growth for clinical and counseling specialties. Clinical and counseling psychologists also will be needed to help people deal with depression and other mental disorders, marriage and family problems, job stress, and addiction. The growing number of elderly will increase the demand for psychologists trained in geropsychology to help people deal with the mental and physical changes that occur as individuals grow older. There also will be an increased need for psychologists to work with military veterans returning from armed conflicts.

Industrial-organizational psychologists also will be in demand to help to boost worker productivity and retention rates in a wide range of businesses. Industrial-organizational psychologists will help companies deal with issues such as workplace diversity and antidiscrimination policies. Companies also will use psychologists' expertise in survey design, analysis, and research to develop tools for marketing evaluation and statistical analysis.

Job Prospects

Job prospects should be the best for people who have a doctoral degree from a leading university in an applied specialty, such as counseling or health, and people with a specialty or doctoral degree in school psychology. Psychologists with extensive training in quantitative research methods and computer science may have a competitive edge over applicants without such a background.

Master's degree holders in fields other than industrial-organizational psychology will face keen competition for jobs because of the limited number of positions that require only a master's degree. Master's degree holders may find jobs as psychological assistants or counselors, providing mental health services under the direct supervision of a licensed psychologist. Still others may find jobs involving research and data collection and analysis in universities, government, or private companies.

Opportunities directly related to psychology will be limited for bachelor's degree holders. Some may find jobs as assistants in rehabilitation centers or other jobs involving data collection and analysis. Those who meet state certification requirements may become high school psychology teachers. **TABLE 20.1** shows some projection data provided by the U.S. Department of Labor.

TABLE 20.1 Projections Data for Psychologists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Psychologists	173,900	206,400	32,500	19%
Clinical, counseling, and school psychologists	155,300	185,900	20,500	20%
Industrial-organizational psychologists	2,000	2,300	300	19%
Psychologists, all other	16,600	18,300	1,600	10%

TABLE 20.2 Median Annual Earnings in the Industries Employing the Largest Number of Psychologists, May 2014

Industrial-organizational psychologists	$76,950
Clinical, counseling, and school Psychologists	$68,900
All other psychologists	$92,110

Earnings

The median annual salary for psychologists as of May 2014 was $92,110. The middle 50% earned between $65,420 and $106,500. The lowest 10% of the occupation earned less than $42,230, while the top 10% earned more than $120,670. The Occupational Outlook Handbook separates psychologists into three categories. TABLE 20.2 lists the median annual wage for each category as May 2014.

Related Occupations

Psychologists work with people, developing relationships and comforting them. Other occupations with similar duties include counselors, social workers, clergy, sociologists, special education teachers, funeral directors, market and survey researchers, recreation workers, and managers and specialists in human resources, training, and labor relations. Psychologists also sometimes diagnose and treat problems, and assist patients in recovery. These duties are similar to those for physicians and surgeons, radiation therapists, audiologists, dentists, optometrists, and speech-language pathologists.

Additional Information

For information on careers, educational requirements, financial assistance, and licensing in all fields of psychology, contact:

- American Psychological Association, Center for Psychology Workforce Analysis and Research and Education Directorate, 750 1st St. NE, Washington, DC 20002. Internet: http://www.apa.org/students

For information on careers, educational requirements, certification, and licensing of school psychologists, contact:

- National Association of School Psychologists, 4340 East West Hwy., Suite 402, Bethesda, MD 20814. Internet: http://www.nasponline.org

Information about state licensing requirements is available from:

- Association of State and Provincial Psychology Boards, P.O. Box 3079, Peachtree City, GA 30269. Internet: http://www.asppb.net

Information about psychology specialty certifications is available from:

- American Board of Professional Psychology, 600 Market St., Suite 201, Chapel Hill, NC 27516. Internet: http://www.abpp.org

SUBSTANCE ABUSE AND BEHAVIORAL DISORDER COUNSELORS

Significant Points

- Most substance abuse and behavioral disorder counselors work in outpatient mental health and substance abuse centers.
- Job prospects are expected to be favorable, particularly for those with specialized training or education.
- Educational requirements range from a high school diploma to a master's degree, depending on a variety of factors.

Work Description

Mental health refers to an individual's psychological and emotional well-being and the individual's ability to function in ordinary life. Two disciplines within the mental health field that deal with improving an individual's psychological and emotional well-being are substance abuse counselors and behavioral disorder counselors.

Substance abuse counselors, also called addiction counselors, advise individuals dealing with alcoholism, illegal drug addiction, and other addictions, such as those involving tobacco, gambling, and painkillers. They provide treatment and support to assist the individual's recovery by evaluating their client's mental and physical health, addictive behaviors, and openness to treatment. With the client's input, the counselor develops a treatment and recovery plan and assists the client with identifying and dealing with behaviors that interfere with both processes. The counselor also assists the client's family with developing strategies to deal with the client's addiction problems.

Behavioral disorder counselors advise individuals how to modify their behavior to deal with specific aspects of their life, often those associated with eating. Well-known eating disorders include **anorexia nervosa**, which is characterized as a refusal to eat; **bulimia nervosa**, which is characterized as involving cyclical binging and purging episodes; or **binge-eating disorder**, which involves periods of binge eating that are not followed by

Professional Profiles

Name: Katie, BS, MEd, PLPC
Title: Clinical Mental Health Counselor
Education: BS Psychology; minor, Criminology
MEd, Clinical Mental Health Counseling

Q: Tell us about your job and the type of organization you work in.

A: I work for an outpatient behavioral health unit with clients who suffer from severe mental illness and who are typically in a lower socioeconomic status. My work is community-based, meaning I meet with clients in their homes or at public places like the library. Within my company, different locations are broken up into territories. My territory make-up is a suburban area ranging from low income to middle class.

Q: Why did you choose this profession?

A: I chose this profession due to always wanting to help people. I also chose this field due to knowing people who struggled with addiction and seeing how it took over them. Seeing someone struggle with addiction made me realize I wanted to be a counselor to help people who need someone to believe in them.

Q: What do you like most about this profession?

A: The aspect of being able to see the smile on a client's face when they recover their mental health or overcome their addiction. I have found that many clients lose their happiness and sense of their self due to a mental health diagnosis or an addiction, so seeing them get on the path to finding themselves again is rewarding.

Q: What challenges you most about this profession?

A: Seeing people struggle with suicidal thoughts. I have had many clients who feel their life is not worth living anymore, and I have to be there to support them and help them realize it is worth living. As a counselor, you are mandated to admit someone to the hospital to keep them safe if they have stated they have a suicidal plan or cannot keep themselves safe. It can be hard to feel like you are forcing someone to go somewhere they don't want to and also to make the judgment call of if they need to go, but it's worth a client's safety.

Q: Is there room for advancement in this field?

A: I think there is a huge chance for advancement in the field due to there being so many different aspects of counseling such as private practice, teaching, working for an agency, and doing research. Recently there has also been advancement in government focus on mental illness, so the field is expected to grow.

Q: Name and explain what part of your academic training most prepared you for this profession.

A: My academics prepared me for the hardships that come with the field. Dealing with clients who struggle with addiction or severe mental illness, it can be hard to understand their struggles. In my training I learned the biology behind an addiction and how mental illness affects the body. By knowing this information, I can educate my clients. My graduate program emphasized multicultural issues. This has helped me to be a better clinician and better able to understand members of different cultures.

Q: What advice would you give someone who is considering this career?

A: Find a way to shadow someone who works in the field or talk to a professional to see what they do everyday. Look for seminars and speakers at your university who are talking about mental health topics.

Q: What personality characteristics are needed for this line of work?

A: Someone who is able to listen to people talk about the smallest or the biggest problems in their life and not judge them. Counseling also requires someone to remain calm in all situations, even under high stress. A counselor needs to be open-minded and not try to make a client fit into their picture of what should happen. It is the client's choice how to live their life, and a counselor should help them along the way.

compensatory behaviors, such as purging, excessive exercise, or fasting. Binge-eating disorder often leads to **obesity**, a weight which is higher than what is considered a healthy weight for a given height. These counselors provide treatment and support by evaluating the patient's mental and physical health to develop a treatment and recovery plan and assist the client with identifying and dealing with behaviors that interfere with the plans. Typical goals identified by behavioral disorder counselors include restoring adequate nutrition, bringing weight to a healthy level, reducing excessive exercise, and stopping binging and purging behaviors. Behavioral disorder counselors frequently assist the client's family with developing strategies to cope with the client's behavioral problems.

Both types of counselors work with clients individually and in group settings to teach patients how to cope with stress and life's problems in ways that will help them recover. Some counselors work with specific populations, such as teenagers, veterans, people with disabilities, or individuals who have been ordered by a judge to receive addiction treatment, They help their patients improve their professional relationships and reestablish their career and/or improve their personal relationships and reconnect with family and friends.

Work Environment

Substance abuse and behavioral disorder counselors work in multiple settings. Some work in mental health or residential treatment facilities where clients live for a fixed period of time. With other health professionals, such as psychiatrists, social workers, physicians, and registered nurses, they develop treatment plans and coordinate care for patients. Other counselors work in private practice, either alone or with a group of other counselors or other professionals. Because they manage their private practices as a business, they engage in typical business activities such as recruiting new patients and billing insurance companies to receive payment for their services.

Some counselors work in non-traditional settings, including those involving persons who have violated the law in some way. These settings include prisons, halfway houses, juvenile detention facilities, and probation or parole agencies. Other counselors work in **employee assistance programs (EAPs)**. These programs are provided by employers to help employees deal with personal problems.

Counselors who work with patients with addictive or behavioral disorders experience stressful situations. They may need to intervene in crisis situations or work with agitated clients, thereby increasing tension and stress. Their workloads are large and they often do not have sufficient resources to meet the demand for their services. An example of the cravings of addiction is shown in FIGURE 20.1.

Employment Opportunities

Substance abuse and behavioral disorder counselors held 94,900 jobs in 2014. About 42% of these counselors work in one of two settings: (1) outpatient mental health and substance abuse centers; or (2) nursing and residential care facilities. The remaining work in hospitals, state and local government, and individual and family services settings.

FIGURE 20.1 Addiction monitor showing cravings.
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Most substance abuse and behavioral disorder counselors work full time. Because of the needs of an employment setting, these counselors may need to work evenings, nights, and weekends.

Education and Legal Requirements

Education requirements vary from the level of a high school diploma to the level of a master's degree.

Education and Training

The wide span of educational requirements is dependent upon the employment setting in which the counselor works, the range of responsibilities involved, the type of work, and state regulations. Those persons holding a high school diploma typically go through a period of on-the-job training. Such training addresses how to respond to crisis situations and deal with persons who suffer from addiction. Those persons with more education, such as those holding a master's degree, are able to provide more services to patients, including private one-on-one counseling sessions. Because of their higher level of education, they require less supervision than those possessing a high school diploma.

Licensure and Certification

Any substance abuse or behavioral disorder counselor who wishes to work in a private practice setting must be licensed.

TABLE 20.3 Projections Data for Substance Abuse and Behavioral Disorder Counselors, 2014–2024

			Change, 2014–2024	
Occupational Title	Employment, 2014	Projected Employment, 2024	Number	Percentage
Substance abuse and behavioral disorder counselors	94,900	116,200	21,200	22%

All states require a license for this setting and also require the counselor to possess a master's degree and have engaged in 2,000 to 4,000 hours of supervised clinical experience. Additionally, counselors must pass a state-recognized exam and engage in continuing education on an annual basis. The National Board for Certified Counselors (NBCC) maintains information about each state's regulating board. Beginning January 1, 2022, the NBCC will require a master's degree or higher from an accredited program to become a certified counselor.[5]

For those substance abuse and behavioral disorder counselors who do not work in private practice, licensure and certification requirements vary by state. Some states specify the level of education required while others require applicants to pass an exam. Additional information about licensing requirements for those not working in private practice can be found through the Addiction Transfer Technology Center.

Other Qualifications

Counselors should be sensitive and compassionate to patients' needs in light of difficult and stressful situations the patients undergo. Interpersonal skills are important because most of a counselor's time is spent working directly with a variety of clients or other professionals. Counselors need good listening skills so that they can understand their patient's concerns, problems, and values. Because of the need to deal with patients effectively, counselors need strong speaking skills. This will assist the patient in understanding ideas and concepts expressed by the counselor. Counselors also need patience and the ability to stay calm, especially when dealing with difficult, disgruntled, or angry patients.

Employment Trends

Job prospects are expected to be favorable, particularly for those with specialized training or education.

Employment Change

Employment of substance abuse and behavioral disorder counselors is expected to grow by 22% from 2014 to 2024, much faster than average for all occupations. The increasing demand will result from more patients receiving coverage under existing health insurance plans and the increase in numbers of patients who possess health insurance as a result of the federal legislative mandate that individuals receive health insurance coverage.

Some states may see a need for more substance abuse and behavioral disorder counselors as they move from a model of jail time for drug offenders to treatment and counseling services. States have dealt with budget issues and overcrowded prisons by changing who should go to prison and who should receive treatment instead, finding these choices to be cost effective. States have also found that those addicted to drugs and other substances are less likely to participate in criminal activity if they receive treatment for their addiction.

Job Prospects

Job opportunities are expected to be good, especially for those with specialized education and training. Some counselors are forced to leave the occupation early because of the stress involved in their jobs, providing openings for new counselors. Some employers experience difficulty recruiting workers with the proper educational requirements and experience in working with addiction. These two points will result in favorable job prospects for those entering the field. TABLE 20.3 shows some projection data from the U.S. Department of Labor.

Earnings

The median annual salary for psychologists as of May 2014 was $39,270. The middle 50% earned between $31,400 and $50,010. The lowest 10% of the occupation earned less than $25,310, while the top 10% earned more than $61,420. TABLE 20.4 shows the median annual earnings of industries employing the largest number of substance abuse and behavioral disorder counselors.

TABLE 20.4 Median Annual Earnings in the Industries Employing the Largest Number of Substance Abuse and Behavioral Disorder Counselors, May 2014

Substance abuse and behavioral disorder counselors	$39,270

Related Occupations

Other occupations with job duties similar to those of substance abuse and behavioral disorder counselors include mental health counselors; marriage and family therapists; registered nurses, rehabilitation counselors; social workers; social and community service workers; and social and human service assistants. Because they diagnose and treat problems and assist patients in recovery, their duties are similar to those for physicians, surgeons, and psychologists.

Additional Information

For information on careers, educational requirements, licensing, and credentialing in the field of addiction counseling, contact:

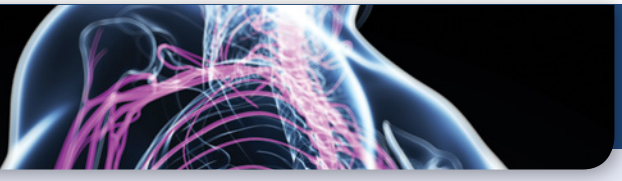
- Addiction Technology Transfer Center Network, Internet: http://www.addictioncareers.org/addictioncareers/
- National Association for Addiction Professionals, 1001 N. Fairfax St., Suite 201, Fairfax, VA 22314. Internet: http://www.naadac.org

For more information about counseling and counseling specialties, visit:

- American Counseling Association, 6101 Stevenson Ave., Suite 600, Alexandria, VA 22304. Internet: http://www.counseling.org

For information on state regulating boards, contact:

- National Board for Certified Counselors, 3 Terrace Way, Greensboro, NC 27403. Internet: http://www.nbcc.org



LEARNING PORTFOLIO

Issues for Discussion

1. The discipline of psychology is complex, with multiple specialty areas. Review the specialty areas listed in this chapter and chose the specialty area with which you have the most interest or that you would recommend to a friend or acquaintance. Explain why you find the specialty area interesting and why you chose this specialty over other specialties.
2. In your opinion, what is the most important responsibility of a psychologist? Explain why you feel this is most important.
3. In your opinion, what is the most important personal attribute a substance abuse or behavioral disorder counselor must have? Explain why you feel this is most important.

Enrichment Activities

1. Use the Internet to research the requirements of your state and two neighboring states to become licensed or certified as a psychologist. List the requirements that you find. Compare and contrast these licensing, certification, and/or registration requirements for this career with any other career you have already examined in this course.
2. Interest in psychology has spanned many centuries. Create a timeline (either as a narrative piece, a poster, or an infographic) tracing the progression of psychology as a science and include the names of key theorists and movements in the field.
3. Watch the career video entitled *Imagine Who You Could Save* from the Addiction Technology Transfer Center Network (Internet: http://www.addictioncareers.org/addictioncareers/campaign/video.asp). Discuss the role of an addiction counselor with your instructor and classmates.
4. Create a table comparing the duties, work environment, licensing requirements, and salary of psychologists and substance abuse/behavioral disorder counselors.

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4. American Board of Professional Psychology. *Member Specialty Boards*. Internet: http://www.abpp.org/i4a/pages/index.cfm?pageid=3279
5. National Board for Certified Counselors. *Announcement*. Internet: http://nbcc.org/assets/Change-announcement-flyer_2014.pdf

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CHAPTER 21

Social Workers*

Key Terms

Association of Social Work Boards (ASWB)
Board-Certified Diplomate (BCD)
Bachelor's degree in Social Work (BSW)
Child and family social worker
Child or adult protective services social workers
Child welfare social workers
Clinical social workers (CSW)
Conflict resolution
Council on Social Work Education
Council for Standards in Human Services Education (CSHSE)
Doctorate in Clinical Social Work (DSW)
Emotional stress
Employee-assistance programs
Environmental factors
Family services social workers
Geriatric social worker
Healthcare social worker
Hospice and palliative care social worker
Human Service Board-Certified Practitioner (HS-BCP)
Human service worker
Licensed clinical social worker (LCSW)
Master's degree in Social Work (MSW)
Meals on wheels
Medical social worker
Mental health and substance abuse social worker
Psychological treatment
School social workers
Social and human service assistants
Social work administrators
Social work planners and policy makers
Vulnerable populations

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

INTRODUCTION

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 occurrences 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

Significant Points

- Although a bachelor's degree is necessary for entry-level positions, a master's degree in social work is required for some positions.
- About one-half of jobs were in healthcare and social assistance industries, and about one-third of social workers worked for the government in 2014.
- Job prospects are expected to be favorable, particularly for social workers who specialize in the aging population or work in rural areas.

Work Description

Social work is a profession for those with a strong desire to help improve people's lives. Social workers assist people by helping them cope with and solve issues in their everyday lives, such as family and personal problems and dealing with relationships. Some social workers help clients who face a disability, life-threatening disease, or social problem, such as inadequate housing, unemployment, or substance abuse. Social workers also assist families that have serious domestic conflicts, sometimes involving child or spousal abuse.

Settings for social workers include schools, colleges and universities, military bases and hospitals, state and local governments, child welfare agencies, nursing and assisted-living facilities, correctional facilities, community mental health clinics, hospitals and primary care centers and clinics including clinics for veterans. Additionally, they may conduct research, advocate for improved services, or become involved in planning or policy development. Many social workers specialize in serving a particular population or working in a specific setting.

Child and family social workers provide social services and assistance to improve the social and psychological functioning of children and their families. Workers in this field assess their clients' needs and offer assistance to improve their situation. This often includes coordinating available services to assist a child or family. They may assist single parents in finding day care, arrange adoptions, or help find foster homes for neglected, abandoned, or abused children. These workers may specialize in working with a particular problem, population, or setting, such as child protective services, adoption, homelessness, domestic violence, or foster care. Clinical social workers provide mental health care to help children and families cope with changes in their lives, such as divorce or other family problems (FIGURE 21.1).

School social workers often serve as the link between students' families and the school, working with parents, guardians, teachers, and other school officials to ensure that students reach their academic and personal potential. They also assist students in dealing with stress or emotional problems. Many school social workers work directly with children with disabilities and their families. In addition, students and their families are often referred to social workers to deal with problems such as aggressive behavior, bullying, or frequent absences from school. School social workers may teach workshops to entire classes on topics like **conflict resolution**.

FIGURE 21.1 Child, family, and school social workers represent about half of all social workers.

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Child, family, and school social workers may be known as **child welfare social workers**, **family services social workers**, or **child or adult protective services social workers.** These workers often work for individual and family services agencies, schools, or state or local governments.

Healthcare social workers provide psychosocial support to individuals, families, or **vulnerable populations** so they can cope with chronic, acute, or terminal illnesses, such as Alzheimer's disease, cancer, or HIV/AIDS. They also advise family caregivers, counsel patients, and help plan for patients' needs after discharge from hospitals. They may arrange for at-home services, such as **Meals on Wheels** or home care. Some work on interdisciplinary teams that evaluate certain kinds of patients, such as geriatric, kidney dialysis, or organ-transplant patients. In addition, they may provide information on services, such as home health care or support groups, to help patients manage their illness or disease. Social workers help doctors and other healthcare professionals understand the effects that diseases and illnesses have on patients' mental and emotional health.

Some healthcare social workers specialize in geriatric social work, hospice and palliative care, or medical social work. **Geriatric social workers** help the elderly and their families find services for older adults such as Meals on Wheels or personal assistance in the home. In some cases, they provide information about other care options such as assisted-living or nursing care facilities or work with older adults in those settings. They help clients and their families make plans for possible health complications or where clients will live if they can no longer care for themselves (FIGURE 21.2).

Hospice and palliative care social workers help patients adjust to serious, chronic, or terminal illnesses. Palliative care focuses on relieving or preventing pain and other symptoms associated with serious illness. Hospice is a type of palliative care for people who are dying. Social workers in this setting provide and find services such as support groups or grief counselors to help patients and their families cope with the illness or disease.

Medical social workers in hospitals help patients and their families by linking patients with resources in the hospital and in their own community. They may work with medical staff to create discharge plans, make referrals to community agencies, facilitate support groups, or conduct follow-up visits with patients once they have been discharged.

Clinical social workers—also called **licensed clinical social workers (LCSWs)**—diagnose and treat mental, behavioral, and emotional disorders, including anxiety and depression. They provide individual, group, family, and couples therapy; they work with clients to develop strategies to change behavior or cope with difficult situations; and they refer clients to other resources or services, such as support groups or other mental health professionals. Clinical social workers can develop treatment plans with the client, doctors, and other healthcare professionals and may adjust the treatment plan if necessary based on their client's progress. Many clinical social workers also work with those with substance abuse.

FIGURE 21.2 Healthcare social workers often specialize in geriatrics.
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Mental health and substance abuse social workers help clients with mental illnesses or addictions. They provide information on services, such as support groups or 12-step programs, to help clients cope with their illness (FIGURE 21.3). Some mental health and substance social workers may work in **employee-assistance programs**. In this setting, they may help people cope with job-related pressures or with personal problems that affect the quality of their work.

FIGURE 21.3 Some social workers specialize in mental health and substance abuse and do individual and group therapy.
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Many clinical social workers work in private practice. In these settings, clinical social workers have administrative and recordkeeping tasks such as working with insurance companies to receive payment for their services. Some work in a group practice with other social workers or mental health professionals. Other social workers are employed as **social work administrators**, social work researchers, and **social work planners and policy makers.** In these roles the social worker develops and implements programs to address issues such as child abuse, homelessness, substance abuse, poverty, and violence. This may require research and analysis of policies, programs, and regulations, grant writing, and writing legislation to change policies. Some social workers become legislators at the state and federal level to influence policies not only for the profession of social work but also policies related to services for those with mental illness or substance abuse disorders.

Work Environment

Social workers usually spend most of their time in an office or residential facility, but they also may travel locally to visit clients, meet with service providers, or attend meetings. Some may meet with clients in one of several offices within a local area. Social work, although satisfying, can be challenging. Understaffing and large caseloads add to the pressure in some agencies. Full-time social workers usually work a standard 40-hour week, but some occasionally work evenings and weekends to meet with clients, attend community meetings, and handle emergencies. Some work part time, particularly in voluntary nonprofit agencies. Many clinical social workers work in private practice. In these settings, clinical social workers have administrative and record-keeping tasks such as working with insurance companies to receive payment for their services.

Employment Opportunities

Social workers held about 649,300 jobs, in 2014. About one-half were child, family, and school social workers, one-fourth were healthcare social workers, and one-fifth worked in mental health and substance abuse. The four top employers for child, family, and school social workers were individual and family services, state governments, local governments, and elementary and secondary schools.[1] Although most social workers are employed in cities or suburbs, some work in rural areas. Employment for healthcare social workers and mental health and substance abuse social workers in 2014, is summarized in TABLE 21.1.

Educational and Legal Requirements

Although most social workers need a bachelor's degree in social work, clinical social workers must have a master's degree and two years of post-master's experience in a supervised clinical setting. Clinical social workers must also be licensed in the state in which they practice.

Education and Training

A **Bachelor's degree in Social Work (BSW)** is the most common minimum requirement to qualify for a job as a social

TABLE 21.1 Distribution of Social Workers by Industry and Type of Social Worker, 2014[1]

Healthcare Social Workers		Mental Health and Substance Abuse Social Workers	
Industry	Percentage	Industry	Percentage
General medical and surgical hospitals	28%	Outpatient care centers	21%
Home healthcare services	12%	Individual and family services	15%
Individual and family services	12%	Residential facilities: intellectual and developmental; Mental health and substance abuse	14%
Nursing care facilities	11%	Local government	12%
Outpatient care centers	6%	Psychiatric and substance abuse hospitals	8%

worker; however, majors in psychology, sociology, and related fields may qualify for some entry-level jobs, especially in small community agencies. Although a bachelor's degree is sufficient for entry into the field, an advanced degree is required for some positions. A **Master's degree in Social Work (MSW)** is typically required for positions in health and school settings, and is required for clinical work as well. Some jobs in public and private agencies may require an advanced degree, such as an MSW with a concentration in social services policy or administration. Supervisory, administrative, and staff training positions usually require an advanced degree. College and university teaching positions and most research appointments normally require a doctorate in social work (DSW or PhD). In 2015, the **Council on Social Work Education** accredited 505 baccalaureate and 238 master's social work programs.[2] The Group for the Advancement of Doctoral Education listed 75 doctoral programs in social work (DSW or PhD) in the U.S., nine in Canada, and one in Israel. The **Doctorate in Clinical Social Work (DSW)** is for practitioners, and the PhD is a doctor of philosophy or research degree.[3]

Bachelor's degree programs prepare graduates for direct service positions, such as caseworker, mental health assistant, group home worker, and residential counselor. These programs include courses in social work values and ethics, dealing with a culturally diverse clientele and at-risk populations, the promotion of social and economic justice, human behavior and the social environment, social welfare policy and services, social work practice, social research methods, and field education. Accredited programs require a minimum of 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 required to perform clinical assessments, manage large caseloads, take on supervisory roles, and explore new ways of drawing upon social services to meet the needs of clients. Master's degree programs usually last two years and include a minimum of 900 hours of supervised field instruction or internship. A part-time program may take four years. Entry into a master's degree program does not require a bachelor's degree in social work, but courses in psychology, biology, sociology, economics, political science, and social work are recommended. In addition, a second language can be very helpful. Most master's degree programs offer advanced standing for those with a bachelor's degree from an accredited social work program. Mental health and behavioral health professionals are eligible for loan repayment programs through the National Health Services Corps.[4]

Licensure

All 50 states, the District of Columbia, the U.S. Virgin Islands, and all 10 Canadian provinces regulate the practice of social work and the use of professional titles. Most states require two years or 3,000 hours of supervised clinical experience for the licensure of clinical social workers. In addition to educational requirements, licensure requires successful completion of the licensing exam prepared by the **Association of Social Work Boards (ASWB)**. Examinations are available for associate's, bachelor's, master's, advanced generalist, and clinical social workers based on education and practice experience. Because licensing requirements vary by state, those interested should contact their state board. Most states also have licenses for nonclinical social workers. For more information about regulatory licensure board by state, contact the ASWB.[5]

Certification and Other Qualifications

The National Association of Social Workers (NASW) offers advanced practice specialty credentials to members of NASW based on their area of practice and experience. Some specialty areas are military, case management, clinical, gerontology, hospice and palliative care, addictions, school, and youth and family.[6] Another option is the Advanced Generalist Certification, **Board-Certified Diplomate (BCD)** in Clinical Social Work, offered by the American Board of Examiners (ABE). The ABE also offers certification in Clinical Supervision, Practice with Children and Their Families, and Psychoanalysis.[7]

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 clients and coworkers. Volunteer or paid jobs as a social work aide can help people test their interest in this field.

Advancement

Social workers certified in a specialty area are recognized as having achievements beyond the minimum requirements in knowledge and experience. Employers may use specialty certification to fill certain positions and certified employees can expect higher salaries. Credentials are especially important for social workers in private practice as insurance companies often require the necessary credentials for reimbursement for services.

Advancement to supervisor, program manager, assistant director, or executive director of a social service agency or department usually requires an advanced degree and related work experience. Other career options for social workers include teaching, research, and consulting. Some of these workers 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, usually paid for through health insurance or by the clients themselves. Private practitioners must have at least a master's degree and a period of supervised work experience. A network of contacts for referrals also is essential.

Employment Trends

Employment for social workers is expected to grow 12% from 2014 to 2024, faster than average for all occupations. Employment growth will be driven by increased demand for health care and social services, but will vary by specialty.

Employment Change

Employment of child, family, and school social workers is expected to grow by about 6%, about average for all occupations. Demand for child and family social workers should continue, as these workers are needed to investigate child abuse cases and place children in foster care and with adoptive families. However, growth for these workers may be hampered by the budget constraints of state and local governments, who are among the largest employers of these workers. Furthermore, demand for school social workers will continue and lead to more jobs as efforts are expanded to respond to rising student enrollments, as well as the continued emphasis on integrating children with disabilities into the general school population. There could be competition for school social work jobs in some areas because of the limited number of openings. The availability of federal, state, and local funding will be a major factor in determining the actual job growth in schools.

Employment of mental health and substance abuse social workers will grow by almost 19%, which is much faster than the average. In particular, social workers specializing in substance abuse will experience strong demand. Substance abusers are increasingly being placed into treatment programs instead of being sentenced to prison. Also, growing numbers of the substance abusers sentenced to prison or probation are being required by correctional systems to have substance abuse treatment added as a condition to their sentence or probation. As this trend grows, demand will strengthen for treatment programs and social workers to assist abusers on the road to recovery. Furthermore, the passage of legislation that requires insurance plans offered by employers to cover mental health treatment and substance abuse disorders in a manner that is equal to the treatment of physical health may increase the demand for mental health treatment.

Growth of employment of healthcare social workers is expected to be about 19%, which is much faster than the average for all occupations. One of the major contributing factors is the rise in the elderly population. These social workers will be needed to assist in finding the best care and assistance for the aging, as well as to support their families. Employment opportunities for social workers with backgrounds in gerontology should be excellent, particularly in the growing numbers of assisted-living and senior-living communities. The expanding senior population also will spur demand for social workers in nursing and assisted-living facilities, home care agencies, and hospices.

Job Prospects

Job prospects are expected to be favorable. Many job openings will stem from growth and the need to replace social workers who leave the occupation. However, competition for social worker jobs is expected in cities where training programs for social workers are prevalent. Opportunities should be good in rural areas, which often find it difficult to attract and retain qualified staff. By specialty, job prospects may be best for those social workers with a background in gerontology and substance abuse treatment. TABLE 21.2 shows some job projections data from the U.S. Department of Labor.

Earnings

Median annual wages of child, family, and school social workers were $45,500 in May 2014. Mean annual wages in the industries employing the largest numbers of child,

TABLE 21.2 Projection Data for Social Workers, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
All social workers	649,300	724,100	74,800	12%
Child, family, and school social workers	305,200	324,200	19,000	6%
Healthcare social workers	160,100	191,000	30,900	19%
Mental health and substance abuse social workers	117,800	140,000	22,300	19%

TABLE 21.3 Mean Annual Wages in the Industries Employing the Largest Numbers of Child, Family and School Social Workers, May 2014[1]

Industry	Salary
Elementary and secondary schools	$60,700
Local government	$51,670
State government	$45,450
Social advocacy organizations	$43,180
Individual and family services	$39,680
Other residential care facilities	$38,220
Community food and housing, emergency and other relief services	$35,300

TABLE 21.4 Mean Annual Wages in the Industries Employing the Largest Numbers of Healthcare Social Workers, May 2014[1]

Industry	Salary
General medical and surgical hospitals	$59,440
Home healthcare services	$58,320
Psychiatric and substance abuse hospitals	$54,370
Outpatient care centers	$53,600
Nursing care facilities	$47,960
Individual and family services	$44,590

family, and school social workers in May 2014 are shown in TABLE 21.3.

Median annual wages for healthcare social workers were $51,930 in May 2014. Mean annual wages in the industries employing the largest numbers of healthcare social workers in May 2014 are shown in TABLE 21.4.

Median annual wages of mental health and substance abuse social workers were $41,380 in May 2014. Mean annual wages in the industries employing the largest numbers of mental health and substance abuse social workers in May 2014 are shown in TABLE 21.5.

Related Occupations

Through direct counseling or referral to other services, social workers help people solve a range of personal problems.

TABLE 21.5 Mean Annual Wages in the Industries Employing the Largest Numbers of Mental Health and Substance Abuse Social Workers, May 2014[1]

Industry	Salary
Psychiatric and substance abuse hospitals	$52,070
Local government	$49,510
Outpatient care centers	$42,380
Individual and family services	$42,320
Residential intellectual and developmental disability, mental health and substance abuse facilities	$39,800
Other residential care facilities	$38,350

Workers in occupations with similar duties include counselors, health educators, probation officers and correctional treatment specialists, psychologists, and social and human service assistants.

SOCIAL AND HUMAN SERVICE ASSISTANTS

Significant Points

- A high school diploma is the minimum educational requirement, but employers often seek individuals with relevant work experience or education beyond high school.
- Employment is projected to grow much faster than the average for all occupations.
- Job opportunities should be excellent, particularly for applicants with appropriate post-secondary education, but wages remain low.

Work Description

Social and human service assistants help people get through difficult times or get additional support. They help clients to identify and obtain benefits and services such as food stamps and Medicaid. In addition to initially connecting clients with benefits or services, social and human service assistants may follow up with clients to ensure that they are receiving the services and that the services are meeting their needs. They work under the direction of social workers, psychologists, or others who have more education or experience. Social and

human service assistants have many job titles, including case work aide, clinical social work aide, family service assistant, social work assistant, addictions counselor assistant, and human service worker.

With *children and families,* assistants ensure that children live in safe homes and may help parents obtain the resources, such as food stamps or childcare. With *older adults,* they help clients stay in their own homes whenever possible by coordinating meal deliveries or finding personal care aides to help with their day-to-day needs, such as running errands or bathing (FIGURE 21.4). In some cases, **human service workers** help look for residential care facilities, such as nursing care or assisted-living facilities. For *people with disabilities,* social and human service assistants help find rehabilitation services or work with employers to adapt the elements of a job to make it accessible to people with disabilities. Some workers find personal care services to help clients with daily living activities, such as bathing or making meals.

For *people with addictions* to alcohol, drugs, or gambling assistants help people find support groups or 12-step programs. They help *veterans* who have been discharged from the military adjust to civilian life with practical needs such as finding housing and applying skills gained in the military to civilian jobs. With *immigrants,* workers help clients adjust to living in a new country. They help the clients locate jobs and housing. They also may help find programs that teach English, or they may find legal assistance for applying for resident status (FIGURE 21.5).

For *people with mental illnesses,* social and human service assistants help clients find resources such as self-help and support groups. In addition, they may find personal care services or group housing to help those with more severe mental illnesses. With the *homeless,* assistants help clients find temporary or permanent housing and locate soup kitchens or food pantries. With *former prison inmates,* assistants find housing and job training or placement programs to help clients reenter society.

FIGURE 21.4 Social and human service assistants may help the elderly with grocery shopping.
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FIGURE 21.5 Social and human service assistants may help new immigrants find food and housing.
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Social and human service assistants play a variety of roles in the community. For example, they may organize and lead group activities, assist clients in need of counseling or crisis intervention, or administer food banks or emergency food programs. In halfway houses, group homes, and government-supported housing programs, they assist adults who need supervision with personal hygiene and daily living tasks. They review clients' records, ensure that clients take prescribed medication, talk with family members, and confer with medical personnel and other caregivers to provide insight into clients' needs. Assistants also give emotional support and help clients become involved in community recreation programs and other activities.

Work Environment

Social and human service assistants work for nonprofit organizations, private for-profit social service agencies, and state and local government. They may work in offices, clinics, hospitals, group homes, and shelters. Some travel around their communities to see clients.

Working conditions of social and human service assistants vary. Some work in offices, clinics, and hospitals, while others work in group homes, shelters, and day programs. Traveling to see clients is required for some jobs. Sometimes working with clients can be dangerous even though most agencies do everything they can to ensure their workers' safety. Most social and human service assistants work full time. Some work nights and weekends. Low pay and heavy workloads cause many workers to leave this occupation, creating opportunities for new workers entering the field.

Educational and Legal Requirements

The minimum requirement is a high school diploma or the equivalent, but some employers prefer to hire workers who have additional education or experience. Without additional education, advancement opportunities are limited.

Education and Training

Social and human service assistants without any post-secondary education usually undergo a period of on-the-job training. Because such workers often are dealing with multiple clients from a wide variety of backgrounds, on-the-job training in case management helps them to respond to the different needs of their clients and to crises the clients sometimes undergo. Certificates or associate's degrees in subjects such as human services, gerontology, or a social or behavioral science are common for workers entering this occupation.

Human services degree programs train students to observe and interview patients, carry out treatment plans, handle people who are undergoing a crisis, and use proper case management and referral procedures. Many programs include fieldwork to give students hands-on experience. The level of education completed often determines job responsibilities. Those with a high school diploma are likely to do lower level work, such as helping clients fill out paperwork. However, assistants with some college education may coordinate program activities or manage a group home. Social and human service assistants with proven leadership ability, especially acquired from paid or volunteer experience in social services, often have 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.

Typical courses are general education courses in liberal arts, sciences, and the humanities are part of the curriculum. Most programs also offer specialized courses related to addictions, gerontology, child protection, and other areas. Many degree programs require the completion of a supervised internship. The **Council for Standards in Human Service Education (CSHSE)** lists accredited programs in human services in 44 community colleges and universities; degrees listed are at the associate's and bachelor's degree level.[8]

Certification and Other Qualifications

A relatively new certification for those who work in human services, **Human Service Board-Certified Practitioner (HS-BCP)**, was designed for those who provide services to a variety of populations who have educational backgrounds that range from certificates to graduate degrees. Those who become certified are recognized as having met educational and experience requirements to work in human services.[9]

The requirements for becoming board certified are education: an associate's, bachelor's or master's degree, documented hours of experience in the field, and successful completion of the certifying examination. Continuing education is required for maintaining certification. Applicants with degrees other than human services are required to complete courses in ethics, interviewing and intervention, assessment and treatment, as well as other courses.

Desirable qualities for social and human service assistants are a strong desire to help others, effective communication skills, a sense of responsibility, and the ability to manage time effectively. Excellent interpersonal skills are necessary for clients to feel comfortable working with assistants; these skills are also needed by assistants in building relationships with referral sources. Many human service jobs involve direct contact with people who are vulnerable to exploitation or mistreatment, so patience and understanding are also highly valued characteristics. It is becoming more common for employers to require a criminal background check, and in some settings, workers may be required to have a valid driver's license.

Advancement

Formal education is almost always necessary for advancement. In general, advancement to case management or social work jobs requires a bachelor's or master's degree in human services, counseling, rehabilitation, social work, or a related field.

Employment Opportunities

Social and human service assistants held about 386,600 jobs in 2014. Residential facilities employed about 16%, individual and family services employed 28%, and 20% worked for local and state governments (TABLE 21.6).

Employment Trends

Employment of social and human service assistants is expected to grow much faster than the average for all occupations. Job prospects are expected to be excellent, particularly for applicants with relevant post-secondary education.

Employment Change

The number of social and human service assistants is expected to grow by nearly 11% between 2012 to 2024, which is faster than the average for all occupations. Growth will be due to an increase in the older adult population and rising demand for health care and social services. The elderly

TABLE 21.6 Distribution of Social and Human Service Assistants by Industry, 2014

Industry	Percentage
Individual and family services	28%
Local and state government	20%
Nursing and residential care facilities	16%
Community and vocational rehabilitaton services	11%

population often needs services such as delivery of meals and adult daycare. Social and human service assistants, who help find and provide these services, will be needed to meet this increased demand.

In addition, growth is expected as more people seek treatment for their addictions and more drug offenders are sent to treatment programs rather than to jail. The result will be an increase in demand for social and human service assistants who work in treatment programs or work with people with addictions. There also will be continued demand for child and family social and human service assistants. These workers will be needed to help others, such as social workers, investigate child abuse cases, as well as place children in foster care and with adoptive families.

Job Prospects

Job prospects for social and human service assistants are expected to be excellent, particularly for individuals with appropriate education after high school. Job openings will come from job growth, but also from the need to replace workers, who advance into new positions, retire, or leave the workforce for other reasons. There will be more competition for jobs in urban areas than in rural areas, but qualified applicants should have little difficulty finding employment. TABLE 21.7 shows projections data from the U.S. Department of Labor.

Earnings

Median annual wages of social and human service assistants were $29,790, and median hourly wages were $14.32 per hour in May 2014. Mean annual wages in the industries employing the largest numbers of social and human service assistants in May 2014 are shown in TABLE 21.8.

Related Occupations

Workers in other occupations that require skills similar to those of social and human service assistants include child care workers, correctional officers, counselors, health educators and community health workers, personal and home care aides, probation officers and correctional treatment specialists, rehabilitation counselors, and social workers.

TABLE 21.8 Mean Annual Wages in the Industries Employing the Largest Numbers of Social and Human Services Assistants, May 2014[1]

Industry	Salary
Local government	$37,780
State government	$37,460
Individual and family services	$30,580
Vocational rehabilitation	$27,730
Residential facilities for intellectual and developmentally disabled, mental health and substance abuse facilities	$27,020

ADDITIONAL INFORMATION

For information about career opportunities in social work and voluntary credentials for social workers, contact:

- National Association of Social Workers, 750 First St. NE, Suite 700, Washington, DC 20002-4241. Internet: http://www.socialworkers.org/
- Center for Clinical Social Work, 27 Congress St., Suite 501, Salem, MA 01970. Internet: http://www.centercsw.org

For a listing of accredited social work programs, contact:

- Council on Social Work Education, 1725 Duke St., Suite 500, Alexandria, VA 22314-3457. Internet: http://www.cswe.org

For information on becoming board certified in clinical social work contact:

- American Board of Examiners, 241 Humphrey Street, Marblehead, MA 01945. Internet: https://www.abecsw.org

TABLE 21.7 Projection Data for Social and Human Service Assistants, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Social and human service assistants	386,600	430,800	44,200	11%

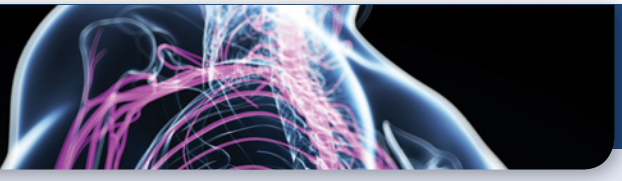
Information on licensing requirements and testing procedures for each state may be obtained from state licensing authorities, or from:

- Association of Social Work Boards, 400 South Ridge Pkwy., Suite B, Culpeper, VA 22701. Internet: http://www.aswb.org

For information on programs and careers for social and human service assistants, contact:

- Council for Standards in Human Services Education, 3337 Duke Street, Alexandria, VA 22314. Internet: http://www.cshse.org/index.html
- National Organization for Human Services, 1600 Sarno Road, Suite 16, Melbourne, FL 32935. Internet: http://www.nationalhumanservices
- Center for Credentialing & Education. 3 Terrace Way, Greensboro, NC. 27403. Internet: http://www.cce-global.org/Credentialing/HSBCP/Requirements

Information on job openings may be available from state employment service offices or directly from city, county, or state departments of health, mental health and mental retardation, and human resources.



LEARNING PORTFOLIO

Issues for Discussion

1. Read the article, *Interview with a Social Worker* with Elizabeth Kelly, a caseworker and medical social worker in Washington, DC, written by Sara Royster from the Career Outlook section of the U.S. Bureau of Labor Statistics (Internet: http://www.bls.gov/careeroutlook/2015/interview/social-worker.htm). Describe three different roles (or job responsibilities) for this medical social worker. Describe one aspect of her job that she especially likes, and one obstacle that she experiences in her job as a social worker. What are her future goals?
2. Use the Association of Social Work Boards (ASWB) website to locate the licensing board for social workers in your state (Internet: https://www.aswb.org/licensees/member-statutes-and-regulations/). Are there different categories for licensing social workers in your state? What are the educational requirements for each category? Are there different licensing exams for each category of social worker?
3. Use the Social Work Career Center of the National Association of Social Workers website to review the job listings (Internet: http://joblink.socialworkers.org/jobs/). Are there positions in your state? Which positions would be considered entry level and which would require special certification or experience?
4. Go to the College of DuPage, Human Services and review the certificate programs offered in human services (Internet: http://www.cod.edu/programs/human_services/index.aspx). List the certificate programs, length of training, cost of training, and employment rate for graduates. What are the advantages of obtaining a certificate for those interested in working in human services?

Enrichment Activities

1. View the video, *This Could Be You: The Many Faces of Social Work*. Internet: https://www.youtube.com/watch?v=77UGDj48oHs
2. Go to the National Association of Social Workers website and review specialty areas for certification for social workers. Internet: http://www.socialworkers.org/credentials/list.asp

References

1. Bureau of Labor Statistics. U.S. Department of Labor. *Occupational Employment and Wages — May 2014*. Internet: http://www.bls.gov/oes/#data
2. Council on Social Work Education. *Accreditation*. Internet: http://www.cswe.org/Accreditation.aspx
3. Group for the Advancement of Doctoral Education in Social Work. *Membership*. Internet: http://www.gadephd.org/Membership.
4. National Health Services Corps. *Loan Repayment*. Internet: http://nhsc.hrsa.gov/loanrepayment/
5. Association of Social Work Boards. *Member Statutes and Regulations*. https://www.aswb.org/licensees/member-statutes-and-regulations/
6. National Association of Social Workers. *NASW Professional Social Work Credentials and Advanced Practice Specialty Credentials*. Internet: http://www.socialworkers.org/credentials/list.asp
7. American Board of Examiners in Clinical Social Work. *About Board Certification*. Internet: http://www.abecsw.org/about-bcd.html
8. Council for Standards in Human Service Education. *Accredited Programs*. Internet: http://www.cshse.org/accredited.html
9. Center for Credentialing & Education. *Application Requirements Human Services-Board-Certified Practitioner*. Internet: http://www.cce-global.org/Credentialing/HSBCP/Requirements

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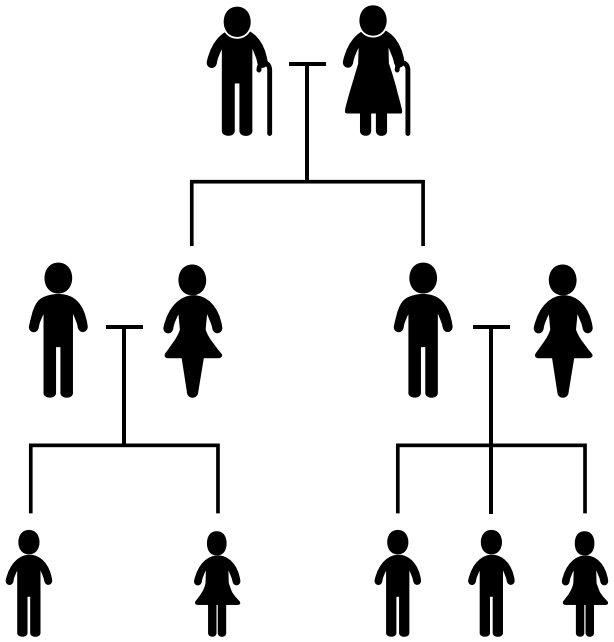

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CHAPTER 22

Genetic Counselors*

Key Terms

Accreditation Council for Genetic Counseling (ACGC)
American Board of Genetic Counseling (ABGC)
Carrier testing
Chromosomes
Genetic counselor
Human Genome Project
Mutations
National Society of Genetic Counselors (NSGC)
Newborn screening
Pedigree
Predictive genetic counseling
Prenatal screening
Psychiatric genetic counseling
Reproductive technology

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

GENETIC COUNSELORS

Significant Points

- A master's degree from an accredited program in genetic counseling is required to be eligible for licensure and to take the certification exam.
- Genetic counselors interpret laboratory results and communicate findings related to genetic conditions to physicians and patients.
- Genetic counselors assist patients and families in making healthcare decisions based on risks for genetic disorders.
- Employment opportunities for genetic counselors are excellent because of advanced technology in DNA testing.
- Most jobs for genetic counselors are in hospitals and offices of physicians in urban areas and teaching hospitals.

Work Description

Genetic counselors provide information and advice to other healthcare providers and to individuals and families concerned with the risk of inherited conditions. A career as a genetic counselor combines a strong scientific background with counseling skills. Genetic counselors assess individual or family risk for a variety of inherited conditions, such as genetic disorders and birth defects. They provide information and advice to other healthcare providers and to individuals and families concerned with the risk of inherited conditions.

Genetic counseling is a rapidly growing career with projections for demands for genetic counselors to increase by 29% between 2014 and 2024, making it one of the fastest-growing health professions. The **Human Genome Project** has uncovered the genetic basis for many diseases, which has increased the demand for genetic counselors to assist individuals, families, and physicians in making decisions regarding health care and treatment.

Genetic counselors identify specific genetic disorders or syndromes that are inherited or passed down from parents to their children. For parents who are expecting children, counselors use genetic tests to predict whether a baby is likely to have hereditary disorders, such as Down syndrome or cystic fibrosis, among others (FIGURE 22.1).

Genetic counselors can also test whether an adult is likely to develop a chronic disease such as cardiovascular disease or ovarian cancer. Counselors identify the probability of developing certain diseases by studying patients' genes through DNA or chromosomal testing. Counselors often perform the lab tests themselves, although sometimes they have medical laboratory technologists perform the tests, which they then interpret and use for counseling. They share this information with other health professionals, such as physicians, and with patients and their families. Physicians use the results of lab tests to make decisions regarding treatment; for example, chemotherapy drugs to treat breast cancer are selected based

FIGURE 22.1 Genetic counselors discuss prenatal screening for genetic disorders with the parents.

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on the cancer's genetic profile obtained via genetic testing. When a genetic disorder is diagnosed the genetic counselor helps the individual and families understand the genetic disease and ways that the disease can be treated. Families can ask questions and express concerns about their health and options for treatment. As with other counseling, the genetic counselor will continue counseling until understanding and acceptance is achieved by individuals and/or families.

Genetic counselors are often consulted by a physician when a genetic disorder has been identified through prenatal or newborn screening or carrier testing. Individuals and families may also seek genetic counseling after an individual or family member has received a medical diagnosis that is genetically transmitted. Couples may seek genetic counseling in order to make a decision about having children. Examples of when couples may seek counseling are if there is a history of a miscarriage or stillbirth, the birth of a child with a genetic disorder or birth defect, or a family history of a genetic disease.[1] Genetic counselors usually schedule an hour for each session and will schedule a follow-up session to discuss the results of genetic tests. Additional follow-up sessions will be scheduled by the counselor to evaluate understanding and how well the individual and family are managing the genetic condition.

During an initial counseling session the counselor will ask questions to obtain a more complete family and medical history to complete a **pedigree** or specialized family tree that includes the health conditions and causes, and the age of death of the biological family members. The family tree aids the genetic counselor in mapping genetic patterns. For example, genetic testing of a child with autism may confirm the cause as fragile X syndrome and identify that the mother is the carrier. Additional information about family members through completion of the pedigree confirms other conditions in the family that can be attributed to the fragile X gene—a maternal aunt has a child with special needs, another maternal aunt was treated for infertility, and the maternal grandfather died of Parkinson's disease.[3]

The counselor may recommend that specific tests be done in potential parents to determine if either is a carrier for a genetic disease. Tests that are done are cytogenic tests, which evaluate for abnormalities in **chromosomes**, and biochemical testing to evaluate for **mutations** in critical proteins—enzymes, hormones, and other regulatory proteins and molecular testing for small mutations of DNA.[3] The counselor will conduct follow-up sessions with the family after testing to provide not only information but emotional support to reduce anxiety and to assist the family in adjusting to the test results. The genetic counselor can also assist the family in making decisions about communicating genetic testing results with extended family members that may be impacted by a diagnosis—for example, early-onset Alzheimer's disease, which has a genetic basis.[3]

Prenatal screening is recommended for all pregnant women over 35 years of age because of a higher risk for the chromosomal abnormality responsible for Down syndrome.

FIGURE 22.2 Genetic screening in newborns identifies genetic disorders and allows for early intervention.
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All state public health departments conduct **newborn screening** to identify inherited disorders such as phenylketonuria (PKU) that requires a diet restricted in the amino acid phenylalanine in the infant soon after birth to prevent mental retardation (**FIGURE 22.2**).

Carrier testing may be done for partners who are considering having a family to determine if either partner carries the risks for genetic diseases known to be present in their family. For example, sickle cell anemia is transmitted to offspring if both parents are carriers for the disease. **Predictive genetic counseling** may be done when adult family members have been diagnosed with dementia, cardiovascular disease, or cancer at an early age. Adult women who have a strong family history of breast cancer may seek further information to evaluate for the presence of BRCA mutations that dramatically increase the risk for breast cancer.[3] **Psychiatric genetic counseling** is a newer area of genetic counseling that may be requested by individuals with a history of autism or a serious mental illness such as schizophrenia or bipolar disease in their family.[1] This information can be used when parents have concerns about the behavior of one of their children to assist the physician or behavioral counselor determine if there is a genetic basis for the behavior and to seek appropriate treatment.

Work Environment

Genetic counselors held about 2,400 jobs in 2014. Genetic counselors work in university medical centers, private and public hospitals, physicians' offices, and diagnostic laboratories. In 2014, 39% worked in hospitals and 20% worked in offices of physicians. They work with families, patients, and other medical professionals.

Work Schedules

Most genetic counselors work full time and have a standard work schedule. Counselors may also work evenings or Saturdays to meet the needs of working families.

Employment Opportunities

In the 1960s, when the career of genetic counseling developed, counselors spent the majority of time in prenatal counseling.[2] Demand for genetic counselors has increased over the past decade in response to more knowledge about diseases that are genetically transmitted because of the Human Genome Project. There is greater public awareness of the genetic basis of disease as well as improved technology for genetic testing for many diseases. In addition, there is greater demand for **reproductive technology** for couples who have been unsuccessful in having a biological child.[3]

Education and Legal Requirements

Genetic counselors typically need at least a master's degree in genetic counseling or genetics, and some earn a PhD. Certification is required by most employers.

Education and Training

A master's degree program in genetic counseling is required to be eligible for licensure and to take the certification exam. A bachelor's degree in one of the biological or social sciences is recommended for applicants. Often those with a degree in biology, genetics, psychology, or public health or those already employed in nursing or social work may choose to become a genetic counselor. Coursework in genetic counseling includes clinical genetics, population genetics, cytogenetics, and molecular genetics, as well as psychosocial theory, ethics, and counseling techniques. Classes emphasize genetics, public health, and counseling techniques. Advanced courses focus on clinical observations, review of previous genetic research, and health communication strategies.

Master's degree programs in genetic counseling require clinical training in a medical genetics center approved by the **Accreditation Council for Genetic Counseling (ACGC)**. The website in the *Additional Information* section at the end of this chapter lists accredited programs in the United States and Canada.[4] An application requires a written personal statement and personal interview. The **National Society of Genetic Counselors (NSGC)** website provides tips to prepare the application packet.[5]

Licensure and Certification

There are currently 15 states that require a license in genetic counseling, and other states have pending legislation for licensure. Certification is typically needed to get a license.

Certification and Other Qualifications

The **American Board of Genetic Counseling (ABGC)** provides certification for genetic counselors. To become certified, a student must first complete a master's degree program that has been accredited by the Accreditation Council for Genetic Counseling. There are currently 34 certified programs in the United States and Canada. Students then must pass a comprehensive exam and continue to accrue continuing education units throughout their careers.

FIGURE 22.3 Genetic counselors discuss lab results with physicians.
© Minerva Studio/Shutterstock

Genetic counselors need a strong science background and the ability to explain complex information in a way that can be understood by someone without a science background. Critical-thinking skills are necessary in interpreting lab results and medical information accurately (**FIGURE 22.3**).

Compassion and sensitivity are important in determining what information will be useful and how to deliver news to individuals and families that is potentially upsetting. Genetic information is rapidly expanding, which requires that genetic counselors participate in professional organizations or conferences to keep abreast of developments in genetics and genomics to provide the most up-to-date services to patients.

Advancement

Genetic counselors that work in industry generally earn higher salaries. Since the profession is small, the opportunities for advancement are limited. Supervisory positions or training others to become genetic counselors may increase responsibilities and salaries.

Employment Trends

According to a 2014 survey from the National Society of Genetic Counselors, approximately three-fourths of genetic counselors work in traditional areas of genetic counseling: prenatal, cancer, and pediatrics. The survey noted that the number of specialized fields for genetic counselors has increased. More genetic counselors are specializing in fields such as cardiovascular health, genomic medicine, neuropsychiatric genetics, and assisted reproductive technologies. Other job opportunities are in research and product development and marketing in the pharmaceutical industry.

TABLE 22.1 Projections Data for Genetic Counselors, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Genetic counselor	2,400	3,100	700	29%

Public awareness of the genetic basis for disease and scientific advances in reproductive technologies have increased the demand for genetic counselors. Work opportunities for genetic counselors are expanding to include not only clinical practice but public policy, public health, administration, research, teaching, and private practice.[6]

Ongoing technological innovations, including lab tests and developments in genomics, are giving counselors the opportunities to conduct more types of analyses. Cancer genomics, for example, can determine a patient's risk for specific types of cancer. The number and types of tests that genetic counselors can administer and interpret has increased over the past few years.

Most growth over the next 10 years for genetic counselors is expected to be in hospitals, and most jobs will be in teaching and research hospitals and in urban areas.

Employment Change

Employment of genetic counselors is projected to grow 29% from 2014 to 2024, much faster than the average for all occupations. However, because it is a small occupation, the fast growth will result in only about 700 new jobs over the 10-year period (TABLE 22.1).

Job Prospects

Genetic counselors can generally expect favorable job prospects. Ongoing innovations in genetic testing are likely to create demand for certified genetic counselors. Most opportunities will be in teaching and research hospitals or in physician's offices in large metropolitan areas.

Earnings

The median annual wage for genetic counselors was $67,500 in May 2014. The mean annual wages for genetic counselors in the top industries in which these counselors worked as of May 2014 were are shown in TABLE 22.2.

Related Occupations

Occupations that require similar training and have similar job responsibilities are epidemiologists, health educators, medical scientists, physicians, mental health counselors, and marriage and family therapists.

ADDITIONAL INFORMATION

For more information about a career in genetic counseling:

- American Dental Education Association. Explore Health Careers.org. Internet: http://explorehealthcareers.org/

For information about accreditation and schools offering education in genetic counseling in the U.S. and Canada visit:

- Accreditation Council for Genetic Counseling (ACGC), P.O. Box 15632, Lenexa, KS 66285. Internet: http://gceducation.org/Pages/Accredited-Programs.asp

For information about genetic counselors, how to become a genetic counselor, and states that require licensure visit:

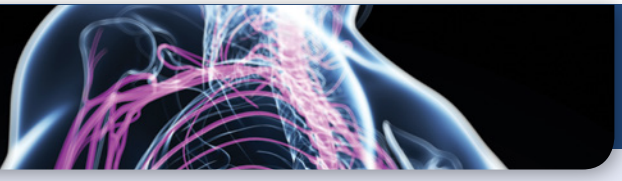
- National Society of Genetic Counselors (NSGC), 330 N. Wabash Avenue, Suite 2000, Chicago, IL 60611. Internet: http://www.nsgc.org/

For information on becoming certified as a genetic counselor in the U.S. and Canada contact:

- American Board of Genetic Counseling (ABGC), P.O. Box 14216, Lenexa, KS 66285. Internet: http://www.abgc.net/ABGC/AmericanBoardofGeneticCounselors.asp

TABLE 22.2 Mean Salaries for Genetic Counselors, May 2014[7]

Medical and diagnostic laboratories	$89,060
Management of companies and enterprises	$82,570
Specialty hospitals	$70,820
Offices of physicians	$69,120
General medical and surgical hospitals	$67,900
Colleges, universities, and professional schools	$60,390



LEARNING PORTFOLIO

Issues for Discussion

1. Discuss the advantages and disadvantages of communicating with extended family when a family member has been diagnosed with early-onset Alzheimer's disease, which has a genetic basis.
2. Discuss the pros and cons for parents deciding to bring a pregnancy to term, terminating the pregnancy, or putting up the child for adoption when prenatal testing determines that the fetus tests positive for Down syndrome.
3. Go to the National Society for Genetic Counselors website (http://nsgc.org/p/cm/ld/fid=44) and review the steps for applying for a master's degree program in genetic counseling. List the steps beginning with choosing an undergraduate degree program through applying for a graduate program.
4. Discuss the similarities and differences in the educational requirements and job responsibilities between a medical social worker and genetic counselor.

Enrichment Activities

1. Go to the National Society for Genetic Counselors' website (http://nsgc.org/p/cm/ld/fid=52) to the section *Collecting and Understanding Your Family History*. Prepare a pedigree (family tree) with diseases, age of onset, and age and cause of death of family members as far back as your great grandparents. What diseases are likely to be genetically transmitted based on your pedigree?
2. Go to the website *Baby's First Test* to find out the requirements for the state where you live for testing newborns for genetic conditions. Internet: www.babysfirsttest.org/newborn-screening/states/
3. Review a 25-minute video counseling simulation of a genetic counselor with a patient referred because both he and his daughter tested positive for a heart abnormality causing a high risk for a sudden heart attack. The video is from the National Society of Genetic Counselors. Internet: http://videos.nsgc.org/Master%20Genetic%20Counselor%20Series/Bennett%20STUDENT%20Session.mov
4. Go to the National Human Genome Research Institute to learn more about genetic counseling and testing for genetic diseases. Internet: http://www.genome.gov/19016905

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CHAPTER 23

Health Education*

Key Terms

Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP)
Activities of daily living (ADLs)
Association for Education and Rehabilitation of the Blind and Visually Impaired (AER)
Autism spectrum disorder (ASD)
Behavior analyst
Behavior Analyst Certification Board (BACB)
Board-Certified Assistant Behavior Analyst® (BCaBA®)
Board-Certified Behavior Analyst® (BCBA®)
Certified health education specialist (CHES)
Certified Vision Rehabilitation Therapist (CVRT)
Community health worker (CHW)
Council on Education for Public Health
Health educator
Independent activities of daily living (IADLs)
Master certified health education specialist (MCHES)
Orientation and mobility (O&M) specialists
National Commission for Health Education Credentialing, Inc.
Patient navigator
Registered Behavior Technician™ (RBT™)
School health educator
Vision rehabilitation therapist (VRT)

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. Occupational Outlook Handbook 2016–2017 Edition. Washington, DC: U.S. Department of Labor; 2016.

HEALTH CAREERS SPECIALIZING IN EDUCATION

The health field offers a variety of career opportunities to those interested in education—community health education and school health education.

Health education is an expanding field that emphasizes the importance of preventive health care. As professionals, **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. Other work titles used to describe health educators are health education teachers, patient educator, health coach, community organizer, public health educator, and health program manager. **Community health workers (CHWs)** are support personnel who work together with health educators to provide outreach and to educate consumers on the importance and availability of healthcare services such as cancer screening.

While the health educator concentrates on the non-school 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.

A significant branch of the health education field presents challenging career opportunities for work with individuals who have visual impairments. Professionals in this work provide essential services to persons with these conditions, enabling them to function successfully in a sighted world. The different types of specialists who work with those who have visual impairment include **orientation and mobility specialists** and **vision rehabilitation therapists (VRTs).** The need for vision specialists is expected to increase with the aging population, especially for those over 75 years of age. In the United States, about 1% of children and teens between 5 and 15 years of age have visual impairments compared to an estimated 10%, or nearly 2 million, in those over 75 years of age.[1]

Another career that has recently gained recognition is **behavior analyst**; in response to the high number of children being diagnosed with **autism spectrum disorder (ASD)**, behavior analysts provide services to clients who have skill deficits in communication and problem behaviors such as aggression and self-injury.[2]

This chapter will use the *Occupational Outlook Handbook, 2016–2017 Edition* as a resource for the sections on Health Educators and Community Health Workers. However, the handbook currently does not include careers for school health teachers, orientation and mobility instructors, vision rehabilitation therapists or behavior analysts. Therefore, these sections will be briefer since less information is available.

HEALTH EDUCATORS

Significant Points

- Health educators work in hospitals and ambulatory care settings, as well as in government and social service agencies.
- A bachelor's degree is the minimum requirement for entry-level jobs and to be eligible to take the exam to become a certified health education specialist, but a master's degree may be required for certain positions or for advancement.
- Faster-than-average job growth is expected.

Work Description

Health educators teach people about behaviors that promote wellness and develop and implement strategies to improve the health of both individuals and communities. Health educators improve public health through community-wide education initiatives on health topics ranging from nutrition and fitness to injury and disease prevention. Health educators help people make better use of available health services, adopt self-care practices, and become more active participants in their community's health system.[3] Community health educators also often have the task of educating legislators and other policy makers in the importance of considering consumer interests when planning and funding health programs.

With major changes taking place in the delivery of health care at local, regional, and national levels as a result of the Affordable Care Act, the participation of health educators 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 avenues. They help to define common goals and stimulate and guide discussion to assist various groups in reaching their own decisions and determining implementation strategies. Whether helping a low-income 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.

Health educators may work through a wide variety of intermediaries in the community—teachers, health officers, public health nurses, trade-union program directors, scout leaders, and community group leaders. In this way, health educators can reach a much larger audience than they would otherwise. These various intermediaries have a personal relationship with those being educated and are therefore likely to have a greater influence.

Health educators also work with the mass media (newspapers, magazines, radio, and television) and social media (Facebook, Twitter, and blogs). They prepare or direct the preparation of appropriate articles, features, and photographs for use by the media or to post on social media. They may 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.

The duties of health educators, who are sometimes called health education specialists, vary with their work settings. Most work in health care facilities, colleges, public health

departments, nonprofits, and private businesses or large corporations. Health educators who teach health classes in middle and high schools are considered teachers.

In *healthcare facilities*, health educators may work one on one with patients and their families. They teach patients about their diagnoses and about any necessary treatments or procedures (FIGURE 23.1).

They may be called **patient navigators** because they help consumers find out about their health insurance options and direct people to outside resources, such as support groups and home health agencies. Health educators in healthcare facilities also help organize health screenings, such as blood pressure checks, and health classes on topics such as installing an infant car seat correctly. They also create programs to train medical staff to interact better with patients. For example, they may teach doctors how to explain complicated procedures to patients in simple language.

In *colleges*, health educators create programs and materials on topics that affect young adults, such as smoking and alcohol use or preventing sexually transmitted diseases. They may train students to be peer educators and supervise the students' delivery of health information in person or through social media. Health educators also advocate for campus-wide policies to promote health such as providing healthy food options in college food-service operations or work to change policies to make it easier for students to report incidences of rape.

In *public health departments*, health educators administer public health campaigns on topics such as emergency preparedness, immunizations, nutrition, or stress management. Those employed by state and local departments of public health administer state-mandated programs based on priorities and available funding. During weather emergencies such as hurricanes, they may provide safety information to the public and the media. Some health educators work with other professionals to create public policies that support healthy behaviors and environments. They may also oversee grants and grant-funded programs to improve the health of the public. Some participate in statewide and local campaigns such as stopping the spread of sexually transmitted diseases such as herpes and HIV/AIDS, promoting breastfeeding, or developing smoke-free policies for large apartment buildings.

In *nonprofits* (including community health organizations), health educators create programs and materials about health issues for the community. Health educators may form and lead community coalitions to address public health issues ranging from the availability of grocery stores or access to safe exercise areas in the community. They help organizations obtain funding and other resources. Many nonprofits focus on a particular disease or audience, so health educators in these organizations limit programs to that specific topic or audience. For example, a health educator may design a program to teach people with diabetes how to better manage their condition or a program for teaching teen mothers how to care for their newborns. In addition, health educators may educate policy makers about ways to improve public health and work on securing grant funding for programs to promote health and disease awareness.

In *private businesses and corporations*, health educators identify common health problems among employees and create programs to improve health. They work with management to develop incentives for employees to adopt healthy behaviors, such as participation in smoking-cessation or weight-management classes offered by the employer. Health educators recommend changes to improve employee health such as creating a smoke-free workplace, offering walking programs for employees, or changing menu items to healthier choices in the cafeteria and vending machines (FIGURE 23.2).

Health educators also conduct research and evaluate programs. An example is a young woman who completed a bachelor's degree in political science and a master's degree in public health. She coordinates and directs projects related to cancer research and prevention. One of her projects is to evaluate a national colorectal cancer screening program to determine which programs are most successful in increasing colorectal cancer screening rates among different populations based on ethnicity, socioeconomic, and educational factors.[4]

FIGURE 23.1 Health educator discussing a health diagnosis with a patient.
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FIGURE 23.2 Health educators work with businesses to promote healthy menu items.
© CandyBox Images/Shutterstock

Work Environment

Depending on the position, health educators work with other health professionals, community groups, state and local health departments, academic researchers, and the media. Although most health educators work in an office, they may spend a lot of time away from the office to carry out programs or attend meetings and some positions require frequent travel. They also may need to work nights and weekends to attend programs or meetings. Most health educators work full time.

Employment Opportunities

Health educators held about 61,400 jobs in 2014. The industries that employed the most health educators in 2014 are shown in TABLE 23.1.

TABLE 23.1 Industries Employing the Largest Numbers of Health Educators, May 2014

Government	22%
Hospitals	21%
Ambulatory healthcare services	16%
Religious, grantmaking, civic, and other professional organizations	10%
Social assistance	10%

Educational and Legal Requirements

Entry-level health educator positions require a bachelor's degree in health education or public health.

Education and Training

Entry-level health educator positions require a bachelor's degree in health education or behavior health/health promotion. These programs teach theories and methods of health education and help students gain the knowledge and skills they need to develop health education materials and programs. Courses in psychology, human development, and a second language are helpful, and experience gained through an internship or other volunteer opportunities can make graduates more appealing to employers. The **Council on Education for Public Health** listed under *Additional Information* at the end of this chapter lists accredited programs.

Some positions require a master's or doctoral degree. Graduate programs are commonly in community health education, school health education, public health education, or health promotion. Entering a master's degree program requires a bachelor's degree, but a variety of undergraduate majors may be acceptable. Many students pursue their master's degree in health education after majoring or working in another related field, such as nursing or psychology. Those 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.

Licensure

In 2015, no states required licensure for health educators. Individual employers, however, may require certification. Since certification of health educators is relatively recent, contact your state's board of health, nursing, or human services to verify requirements for individual states.

Certification and Other Qualifications

Some employers require health educators to be a **certified health education specialist (CHES)**. CHES certification, offered by the National Commission for Health Education Credentialing, Inc., is awarded after a candidate passes the qualifying exam. The exam is aimed at entry-level health educators who have completed a bachelor's degree or are within three months of completion. There is also a **master certified health education specialist (MCHES)** credential for health educators with advanced education and experience; the requirements are experience working in the field for at least five years and successfully completing the MCHES competency exam. To maintain certification, health educators must complete 75 hours of continuing education every five years.[5]

Since health educators spend much of their time working with people, they must be comfortable working with both individuals and groups. They need to be good communicators and be comfortable speaking in public, as they may need to teach classes or give presentations. Health educators often work with diverse populations, so they must be sensitive to cultural differences and open to working with people of varied backgrounds. Health educators often create new programs or materials, so they should be creative and skilled writers. They must be able to play a variety of roles successfully and adjust 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.

Advancement

A graduate degree is usually required to advance to jobs such as executive director, supervisor, or senior health educator. Work in these positions may require more time on planning and evaluating programs than on implementation, and require supervising other health educators who implement the programs. Health educators at this level may also work with administrators of related programs.

TABLE 23.2 Projections Data for Health Educators, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Health educators	61,400	68,900	7,500	12%

Employment Trends

Growth will be driven by efforts to improve health outcomes and to reduce healthcare costs by teaching people about healthy habits and behaviors and utilization of available healthcare services. As healthcare costs continue to rise, insurance companies, employers, and governments are trying to find ways to both improve the quality of care and health outcomes, while curbing costs. One of the challenges for health educators is that health educators focus on the prevention of disease while the healthcare system reimburses healthcare workers for treatment of disease.[6]

Employment Change

Employment of health educators is projected to grow 12% from 2014 to 2024, faster than the average for all occupations. Growth will be driven by efforts to improve health outcomes and to reduce healthcare costs by teaching people about healthy habits and behaviors and utilization of available healthcare services.

One way to achieve these efforts is to employ health educators who teach people how to live healthy lives and how to avoid costly diseases and medical procedures. Lifestyle changes can reduce the probability of contracting a number of illnesses, such as lung cancer, HIV, heart disease, and skin cancer. If a person already has a disease such as asthma, health educators help people understand how to manage their condition and avoid unnecessary trips to the emergency room. Health educators help people understand how what they do affects their health.

For many illnesses, such as breast cancer and testicular cancer, finding the disease early greatly increases the likelihood that treatment will be successful. Therefore, it is important for people to know how to identify potential problems and when to seek medical help. The need to provide the public with this kind of information is expected to result in an increased demand for health educators.

Job Prospects

Job opportunities are expected to be excellent for health educators especially for those who are certified and have a master's degree. As a result of federal health reform with greater access to medical care, health educators will be needed to direct patients in obtaining access to healthcare services. In addition, a number of state and local programs designed to manage conditions such as diabetes and obesity include health educators as part of intervention teams. TABLE 23.2 lists projected new jobs between 2014 and 2024.

TABLE 23.3 Median Annual Wages in the Industries Employing the Largest Numbers of Health Educators, May 2015

Hospitals	$61,610
Government	$54,050
Ambulatory healthcare services	$50,300
Religious, grantmaking, civic, and professional organizations	$47,360
Social assistance	$39,390

Earnings

The median annual wage for health educators was $51,960 in May 2015. The median annual wages for health educators in the top five industries in which these educators worked as of May 2014 are shown in TABLE 23.3.

Related Occupations

Other professions with similar educational requirements and job responsibilities include dietitians and nutritionists, epidemiologists, mental health counselors, social workers, substance abuse and behavior disorder counselors, elementary, secondary, and postsecondary teachers, training and development specialists, and patient representatives.

SCHOOL HEALTH EDUCATORS

Work Description

School health educators help children and adolescents develop the knowledge, attitudes, and skills they need to have a healthy life. They work closely with the school physician and nurse, as well as other teachers, social workers, dietitians and/or food service directors, and administrators to develop a health education program for schools. 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 when high school seniors make a field survey of the health services available in their community.

Depending on the school system and grade level, 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 schoolchildren work together effectively.

Work Environment

School health educators usually work in a classroom setting but may travel between classrooms and to other schools in the district. They also may be required to work evenings to conduct programs for parents and families.

Employment Opportunities

Employment for health education teachers may decrease in secondary schools. Many schools, facing budget cuts, ask teachers trained in other fields, such as science or physical education, to teach the subject of health education. In addition, few schools require students to take health classes.

Educational and Legal Requirements

The school health educator needs four years of college education leading to a bachelor's degree and to be licensed and/or certified to teach by the state where the educator is working.

Education and Training

Working as a school health educator requires a bachelor's degree with a background in the biological, behavioral, and social sciences and health education. Increasingly, a master's degree is required. States also require completing a teacher preparation program and supervised experience in teaching, typically gained through student teaching. Some states require a minimum grade point average. States typically require candidates to pass a general teaching certification test, as well as a test that demonstrates their knowledge in the subject.

Licensure

All states require that public school teachers be licensed or certified. High school teachers typically are awarded a secondary or high school certification, which allows them to teach the seventh through the twelfth grades. Requirements for certification vary by state; however, all states require at least a bachelor's degree in a teacher preparation program and supervised student teaching. States typically require successful completion of a certification exam.

Certification and Other Requirements

The school health educator must meet the regular certification standards for teachers in the state. Personal qualifications for this educational specialist are similar to those for a 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.

COMMUNITY HEALTH WORKERS

Significant Points

- Over 50% of community health workers work for individual and family services, local governments, hospitals, and ambulatory healthcare services.
- Community health workers serve as a link between health educators and other health professionals and community members who need health or social services.
- An entry-level position as a community health worker requires a high school diploma; licensure or certification are not required. However, some states are considering certification, which would require completion of a one- to two-year approved training program.

Work Description

Community health workers (CHWs) provide a link between the community and health educators and other healthcare workers and develop and implement strategies to improve the health of individuals and communities. They collect data and discuss health concerns with members of specific populations or communities. Although the two occupations often work together, responsibilities of health educators and community health workers are distinct.

CHWs typically work in underprivileged and marginalized communities where people such as refugees or migrant workers have limited resources and lack access to quality health care. In addition, members of these communities are typically not fluent in English and have values and behaviors different from the dominant Western culture.[7] The role of CHWs is to serve as a bridge between the community and the health care, government, and social service systems.

CHWs have an in-depth knowledge of the communities they serve. They identify health-related issues that affect a community, collect data, and discuss health concerns with the people they serve. For example, they may help eligible residents of a neighborhood enroll in programs such as Medicaid, Medicare, or Women, Infants, and Children (WIC), explaining the benefits of these programs. CHWs address any barriers to care and provide referrals for such needs as food, housing, education, and mental health services. They also educate people about the importance and availability of healthcare services, such as cancer screenings or diabetes support groups. They also provide informal counseling and social support.

CHWs report their findings to health educators and healthcare providers so that the educators can create new programs or adjust existing programs or events to better suit the demands of their audience. Community health workers also advocate for the health needs of community members. In addition, they conduct outreach to engage community residents, assist residents with health system navigation, and to improve care coordination.

Work Environment

CHWs work in a variety of settings, including hospitals, nonprofit organizations, government, physicians' offices, private businesses and corporations, and colleges. Community health workers live and work in rural, urban, and metropolitan areas and Native American nations. They may spend much of their time in the field, communicating with community members and holding events. Most community health workers work full time. They may need to work nights and weekends to attend programs or meetings.

TABLE 23.4 Industries Employing the Largest Numbers of Community Health Workers, May 2014

Individual and family services	21%
Ambulatory healthcare services	19%
Government	16%
Religious, grantmaking, civic, and other professional organizations	15%
Hospitals	8%

Employment Opportunities

There were 54,300 CHWs in 2014. The industries that employed the most CHWs in 2014 are shown in TABLE 23.4.

Education and Legal Requirements

Most entry-level jobs for CHWs require a high school diploma, although some employers may require a postsecondary certificate or an associate's degree. CHWs typically have a shared language or life experience and an understanding of the community that they serve (TABLE 23.4).

Education and Training

CHWs typically have a high school diploma, although some jobs may require postsecondary education. Education programs may lead to a one-year certificate or a two-year associate's degree and cover topics such as wellness, ethics, and cultural awareness, among others. Education programs are based in colleges or in the community.

CHWs typically complete a brief period of on-the-job training. This training often covers core competencies such as communication or outreach skills as well as information about the specific health topics that they will be focusing on. For instance, CHWs who work with Alzheimer's patients may learn about how to communicate effectively with patients dealing with dementia.

Licensure

States do not require CHWs to be licensed. Since some states are considering certification, contact your state's board of health, nursing, or human services to verify requirements for individual states.

Certification and Other Qualifications

Most states do not require CHWs to become certified; however, voluntary certification exists or is being considered or developed in a number of states. Requirements vary but may include completing an approved training program. For more information, contact your state's board of health, nursing, or human services.

CHWs usually have some knowledge of a specific community, population, medical condition, or disability. The ability to speak a foreign language may be helpful. Since they interact with many people from a variety of backgrounds,

CHWs must be good listeners and be culturally sensitive to respond to the needs of the people they serve.

Advancement

CHWs with advanced training and experience working in the community in which they are employed will have greater opportunities for advancement.

Employment Trends

As a result of federal health reform there is more emphasis on health prevention to reduce healthcare costs. Because of the emphasis on prevention, there is expected to be greater demands for both health educators and community health workers.

Employment Change

Employment of CHWs is expected to increase 15% between 2014 and 2024, faster than other occupations. Job growth will come from expanded health coverage and efforts to prevent disease as a result of federal health reform.

Job Prospects

Community health workers who have completed a formal education program and those who have experience working with a specific population may enjoy favorable job prospects. In addition, opportunities may be better for candidates who speak a foreign language.

Earnings

The median annual wage for CHWs was $34,870 in May 2014. The lowest 10% earned less than $20,790, and the top 10% earned more than $60,360. In May 2015, the median annual wages for CHWs in the top five industries in which they worked are shown in TABLE 23.6.

TABLE 23.6 Median Annual Wages in the Industries Employing the Largest Numbers of Community Health Workers, May 2015

Hospitals	$43,530
Government	$39,240
Religious, grantmaking, civic, and other professional orginzations	$38,190
Ambulatory healthcare services	$34,740
Individual and family services	$33,740

Related Occupations

Other health professionals who have similar training requirements and job responsibilities are social and human service assistants.

ORIENTATION AND MOBILITY SPECIALISTS

Work Description

Orientation and mobility (O&M) specialists teach individuals with visual impairments to travel safely, confidently, and independently in their environment. They work with infants, children, and adults usually on a one-to-one basis in the client's home, school, hospital, or in the community. O & M specialists are different from physical, occupational, and recreation therapists because they focus on people with vision loss.

They also may work with those who have multiple disabilities to help them adjust personally and achieve maximum independence through specialized training. O & M specialists evaluate their clients 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.

TABLE 23.5 Projections Data for Community Health Workers, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Community health worker	54,300	62,400	8,100	15%

Specialists assist clients in making the maximum use of their remaining senses, primarily auditory (sound) and tactile (touch). They train clients to orient themselves to physical surroundings and use a variety of actual or simulated travel situations to develop the client's ability to travel alone, with or without a cane. Specialists train clients to use mobility devices and human or dog guides, electronic travel aids, Global Positioning System (GPS) or other adaptive mobility devices. O & M specialists 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.

An O & M specialist works with all ages, from encouraging a blind infant to move towards the sound of a musical toy to teaching long-cane travel skills to a grandmother so that she can navigate the airport to visit her grandchildren in another city. An instructor employed by a Veterans Administration (VA) clinic might orient a 30-year-old blinded veteran with a dog guide to her new job site. Another specialist employed by a university might orient an incoming freshman who is blind to locate her classrooms, the library, and the cafeteria. In a school setting the O & M instructor might counsel a high school junior who recently lost his vision about how to be independent despite knowing that he will not be able to obtain a driver's license. A specialist employed by a private agency that provides services for the blind teaches a young man to cross a busy intersection between his job and the nearby gym. As an advocate for the blind, the specialist consults with city planners and traffic engineers to design safe intersection designs for pedestrians who are visually impaired (**FIGURE 23.3**).[8]

FIGURE 23.3 Orientation and mobility instructors teach the blind to navigate city streets.
© Lisa S./Shutterstock

Work Environment

O & M specialists are employed in a variety of settings. This could be in the client's home, in residential schools for those who are blind, and state rehabilitation agencies. O & M specialists also work in public schools, colleges and universities, VA hospitals and clinics, public and private agencies for the blind, dog guide schools, and camps for those with disabilities. Working conditions for specialists vary from one facility to another.

O & M specialists can expect to work a 40-hour week, with hours from 8:00 AM to 4:30 PM, working at one site and traveling to different sites during the day. Specialists may sometimes accompany their clients to recreational activities and social gatherings. Some O & M specialists work as consultants and contract with agencies and private individuals.

Employment Opportunities

Employment prospects for qualified O & M specialists are excellent; available openings far exceed the number of graduates entering the labor market each year. There is a national shortage of mobility instructors. However, vision rehabilitation services are not widely available, especially for older adults.

Except for the VA blind rehabilitation centers, visual impairment services have been available through public schools or social service agencies instead of through the healthcare system. Working adults with visual impairments may receive services through rehabilitation services. Since Medicare does not provide reimbursement for vision rehabilitation, services may be limited for the elderly unless the cost of the services are provided by individual states or by the individual. The medical model and the Centers for Medicare and Medicaid requires research to demonstrate the effectiveness or cost-effectiveness of treatment, which is lacking for O & M specialists and vision rehabilitation therapists.[9]

Educational and Legal Requirements

The minimum requirement for entry-level O & M specialists is a bachelor's degree in orientation and mobility including a practicum and an internship.

Education and Training

Entry-level O & M specialists require a bachelor's degree. However, the majority of training programs are offered at the graduate level. For those with a bachelor's degree in another field, a master's degree or graduate certification in orientation and mobility is required. Some programs offer courses online. Successfully completing a certification examination is also required.[9] Degrees are usually offered within special education or rehabilitation programs. The **Association for Education and Rehabilitation of the Blind and Visually Impaired (AER)** lists approved academic programs.[10] Required

courses include literary braille and rehabilitation counseling; core courses are orientation and mobility, communication and instructional methods for those with low vision, as well as 350 hours of supervised practice.

Licensure

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 relevant current standards.

Certification and Other Qualifications

The **Academy for Certification of Vision Rehabilitation (ACVREP)** provides certification for orientation and mobility specialists who meet specified education and experience standards and successfully complete the certification exam. Those who complete all requirements are designated as a Certified Orientation and Mobility Specialist (COMS®).[11]

Those 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 specialists to work closely with families, friends, and colleagues of clients. The work is also physically demanding and requires working outdoors in all kinds of weather. O & M specialists should possess mature judgment, emotional and social maturity, adaptability, resourcefulness, and leadership potential.

Advancement

O & M specialists 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.

Job Prospects

Job prospects are excellent for those who are certified as an O & M specialist. Most jobs will be located in large metropolitan areas and in cities that have public transportation. Less populated states may have only one or two O & M specialists that cover the entire state. The VA has 13 regional blind rehabilitation centers across the US and Puerto Rico that offer O & M training for blind veterans.[12] Because there is a shortage of O & M specialists, training programs often have requests from prospective employers.

Earnings

Salaries for O & M specialists range between $49,454 and $61,101.[13]

Related Occupations

Other health professionals who have similar training requirements and job responsibilities are special education teachers, rehabilitation counselors, low-vision therapists, and vision rehabilitation therapists.

VISION REHABILITATION THERAPISTS

Work Description

Visual rehabilitation therapists (VRTs) provide instruction and guidance to clients who have visual impairments to use community resources and assistive technology to enable them to live safe and productive lives. VRTs, formerly called rehabilitation teachers, are specialists in independent living who teach people with limited vision to create new approaches to familiar routines. The VRT evaluates the ability of the client to perform **activities of daily living (ADLs)** and **independent acts of daily living (IADLs)** and psychosocial issues related to vision impairment. They provide specialized methods or adaptive techniques for communication and coping with the demands of daily living.

The VRT may provide instruction to teach clients how to manage ADLs after the loss of sight, for example, personal hygiene, grooming, and table etiquette, as well as IADLs—housekeeping, grocery shopping, meal preparation, minor home repairs, managing finances, and navigating the home environment and using public transportation. These therapists also help clients obtain specially designed equipment such as magnifying devices, braille clocks and watches, and various types of aides to compensate for loss of vision. The broad sphere of communication includes braille, the use of computer and recording technology, handwriting, and low-vision technology. They help those who are newly blind develop communication skills by providing instruction in the use of braille, large print, recorded materials, low-vision technology, keyboarding, and telephones. For example the VRT suggests resources such as talking books, recording devices, and radio reading services (FIGURE 23.4).

FIGURE 23.4 Visual rehabilitation therapists teach the blind to use braille.
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In addition, they teach nonverbal communication skills, such as facial expressions, hand movements, and head nods for use in communication with sighted persons.

VRTs work with clients of all ages to carry out daily activities, for example a VRT might show a third grader how to use a magnifier to read directions for a board game, show a senior citizen to use the computer to send an email to a grandchild, teach a college student to read a braille menu when ordering carry out from a restaurant, and train an elderly man to organize and label mediations.[14]

Each client with whom the VRT works is unique. Beyond the obvious fact that they are have visual impairments, 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 therapist, whose role is to help the client reach the level of functioning he or she wishes, rather than make the client fit a preconceived image.

Work Environment

VRTs work with individuals or small groups in the home setting, as well as in healthcare facilities, such as rehabilitation centers, hospitals and clinics, nursing homes and assisted-living facilities, or community centers. Some travel will be required for VRTs to go to the homes of clients to guide them in making changes to the home environment to make it easier to carry out daily activities. The VRT needs to be familiar with resources on both the local and national level. They may work with other team members providing services to the client including occupational therapists and dietitians and others.

Employment Opportunities

The need for qualified VRTs is growing due to increases in the number of persons experiencing blindness or visual impairment, particularly among senior citizens. The elderly often do not receive the assistance needed to maintain independence with loss of vision because Medicare does not cover the cost of vision rehabilitation for nonworking individuals.[9] However, these individuals will need the professional specialized services that only a vision rehabilitation therapist can provide.

Educational and Legal Requirements

The minimum educational requirements for a VRT is a bachelor's degree plus a graduate certificate and completion of the certification exam for VRTs.

Education and Training

VRTs require a bachelor's degree in any field. Routes to become a VRT are to obtain a graduate certificate or a master's degree in vision rehabilitation therapy including 350 hours of supervised practice. Degrees are usually offered within special education or rehabilitation programs. Some programs offer distance learning. Successfully completing a certification examination is also required. The AER lists approved academic programs.[10] Required courses include literary braille and rehabilitation counseling; core courses are orientation and mobility and communication and instructional methods for those with low vision.

Licensure

There are no requirements for VRTs to be licensed. However most employers will require certification which is not regulated by states.

Certification and Other Qualifications

The ACVREP provides certification for vision rehabilitation therapists. Those who meet specified education and experience standards and successfully complete the certification exam receive the title, **Certified Vision Rehabilitation Therapist (CVRT).** [11]

Advancement

Qualified VRTs 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 degree programs.

Job Prospects

Job prospects are excellent for those who are certified as a vision rehabilitation therapist especially for those who are willing to go where the jobs are. Most jobs will be located in large metropolitan areas; in less densely populated states there may only be one center that offers blind rehabilitation. Some jobs are available in schools for the blind and may require a bachelor's degree in special education. The VA has 13 regional blind rehabilitation centers across the US and Puerto Rico.[12]

Earnings

Salaries for VRTs are expected to be similar to that of O & M instructors, between $49,454 and $61,101. VRTs employed as teachers of the blind in a public school setting can expect to receive a salary similar to other teachers with the same education and experience level.

Related Occupations

Other health professionals who have similar training requirements job responsibilities are vocational rehabilitation counselor, rehabilitation teacher, orientation and mobility specialist and occupational therapist.

Professional Profiles

Name: Kristin, BCBA
Title: Board Certified Behavior Analyst
Education: BS in Psychology, MS in Psychology

Q: Describe your job and organization

A: I work for an organization that provides in-home therapy based on the principles of applied behavior analysis to children and adults with autism spectrum disorder (ASD).

Q: Describe a typical work day

A: Schedules are built around the client's availability and sessions may occur for full days, before or after school, or weekends depending on the number of hours of therapy recommended by the Board - Certified Behavior Analyst (BCBA). Because every client presents with a different set of skills and skill deficits, each requires a highly individualized curriculum and plan for addressing maladaptive behavior. A BCBA will balance many responsibilities including the assessment of skills and behavior, treatment planning, collecting, graphing and analyzing data, leading meetings with families and staff, and staff training.

Q: Why did you choose this profession?

A: To help people achieve meaningful and socially significant change through the science of behavior analysis and personal qualities of curiosity, perseverance, diligence, ethics, and honesty.

Q: What challenges you most about this profession?

A: Behavior analysts work with clients that display challenging and sometimes dangerous behavior. This can be one of the more difficult aspects of the profession but also one of the most rewarding. Particularly when these behaviors can be replaced with more appropriate and adaptive behavior that helps the individual function more effectively within their family unit and community.

Q: Is there room for advancement in this field?

A: Behavior analysts can advance to a clinical director role responsible for support and mentorship for newly certified BCBAs. A doctoral-level credential is also an option.

Q: Name and explain what part of your academic training most prepared you for this profession

A: Graduate coursework helped to establish the foundation of basic concepts. Fieldwork in clinical settings under the direct supervision and mentorship of experienced behavior analysts was critical in learning to apply these concepts in systematic ways to understand human behavior in the natural world.

Q: What advice would you give someone who is considering this career?

A: Applied behavior analysis therapy with children with ASD is probably the most common and popular placement for a BCBA. However, behavior analysts also work with individuals in drug rehabilitation programs or with those at risk for overweight or obesity who need support in changing dietary or physical activity habits. In the field of Organizational Behavior Management, BCBAs help modify environmental variables to improve work performance or in other settings requiring socially significant behavior change.

BEHAVIOR ANALYSTS – AN OVERVIEW

Behavior analysts are in demand because of the high number of infants and children being diagnosed with ASD characterized by skill deficits in communication and adaptive behavior and problem behavior (aggression, self-injurious behavior). Most states now require that health insurance cover services by behavior analysts. Because of a greater level of awareness of ASD there is earlier diagnosis and intervention of children with ASD and a high demand for professionals able to provide these services.

There are three different levels of certification in the area of behavior analysis. The **Board-Certified Behavior Analyst® (BCBA®)** has graduate-level certification in behavior analysis and writes treatment plans and supervises implementation of behavior analysis plans by both the **Board-Certified Assistant Behavior Analyst® (BCaBA®),** who has bachelor's level certification, and the **Registered Behavior Technician™ (RBT™),** a paraprofessional with 40 hours of postsecondary training The role of the BCBA® is to conduct assessments, develop treatment plans, supervise implementation of treatment plans by the BCaBA® and RBT™, and evaluate and document treatment and modify intervention as necessary. Successfully passing a certification exam administered by the **Behavior Analysis Certification Board (BACB)** is required by all three levels of professionals.[15]

Work Description

Behavior analysts work in schools, homes, and community settings, and consult in the design and implementation of treatment plans for a variety of learners across a variety of skills. Behavior analysts are qualified to provide services to clients with a variety of needs and skill deficits, for example communication and adaptive behavior and problem behavior (aggression, self-injurious behavior). Goals of behavior analysis and intervention are to improve language, motor, social, and reasoning skills. Services usually include conducting behavioral assessments, analyzing assessment data, writing and revising behavior-analytic treatment plans, training others to implement components of treatment plans, and supervising the implementation of treatment plans by others.[2]

Work Environment

Behavior analysts work in schools, hospitals, mental health centers, behavioral centers, residential facilities, and in the client's home. There are new opportunities in corporations and industrial settings to teach job skills and promote work performance of employees. Behavior analysts supervise implementation of treatment plans and communicate with parents and employers.

Employment Opportunities

Employment opportunities are expected to continue to be excellent for BCBA® because research has demonstrated the benefits of early intervention and because more and more states require health insurance to cover the services of the BCBA®. Certified assistant behavior analysts and technicians can also expect excellent employment opportunities because these professionals are required to carry out treatment plans.

Education and Legal Requirements

The minimum requirement to become a certified behavior analyst is a master's degree in behavior analysis or certification for those with a master's degree in another field such as psychology, special education, speech pathology, or social work.

Education and Training

To be eligible for certification as a behavior analyst, a master's degree in behavior analysis is required plus 1,000 to 1,500 hours of fieldwork or a supervised internship. Students with a master's degree in a closely related field, such as special education or guidance and counseling, would need to complete a certification program to be eligible for board certification. Courses include behavior assessment, behavior change methods, behavior change systems, managing implementation, and supervision. Each program may have preferences for the educational or experience background of applicants. However, the BACB has specific course content and internship requirements. The BACB website lists approved university training programs in the U.S. and abroad. Programs are typically in departments of education, special education, or psychology. Many programs offer distance education and online courses.[16]

Licensure

In 2015 there were 23 states that required licensure and one state required state certification of BCBA®. Two states passed laws requiring licensure in 2009, nearly half of the states passed legislation during 2014-2015. For the BCaBA® 15 states require licensure, all but four of the remaining states require certification or registration The majority of RBT™ are not regulated by the states with the exception of Oregon and Louisiana, which require registration, and Washington and Nevada, which require state certification.[17]

Certification and Other Requirements

The Board-Certified Behavior Analyst® (BCBA®) is a graduate-level certification in behavior analysis. Professionals who are certified at the BCBA level are independent practitioners who provide behavior-analytic services. In addition, BCBAs

supervise the work of the Board-Certified Assistant Behavior Analyst® (BCaBA®) and the Registered Behavior Technician™ (RBT™), who implement behavior-analytic interventions.[15]

Earnings

The median salary for the entry-level BCBA® was $55,000 in July 2015 for those working full time.[18]

ADDITIONAL INFORMATION

For more information about health educators contact:

- Explorehealthcareers.org. Internet: http://explorehealthcareers.org/en/Career/46/Behavioral_Science-Health_Education

For more information about public health visit:

- American Public Health Association, 800 I Street NW, Washington, DC. 20001. Internet: http://www.apha.org/what-is-public-health

For information about academic programs in health education contact:

- Association of Schools and Programs of Public Health, 1500 M Street NW, Suite 710, Washington, DC, 20036 Internet: http://www.aspph.org/

For accredited programs in public health including health promotion and health education contact:

- Council on Education for Public Health, 1010 Wayne Avenue, Suite 220, Silver Spring, MD 20910. Internet: http://ceph.org/accredited/

For information on the requirements for CHES and MCHES credentials, contact:

- National Commission for Health Education Credentialing, Inc., (NCHEC) 1541 Alta Dr., Suite 303, Whitehall, PA 18052-5642. Internet: http://www.nchec.org/overview

For information about school health programs contact:

- American School Health Association, 7918 Jones Branch Drive, Suite 300, McLean, VA 22102. Internet: http://www.ashaweb.org/

For further information on becoming certified in vision rehabilitation contact

- Academy for Certification of Vision Rehabilitation & Education Professionals, 4732 N. Oracle Road, Suite #217, Tucson, AZ 85705. Internet: https://www.acvrep.org/ascerteon/control/index

For academic programs in orientation and mobility and vision rehabilitation therapy contact:

- Association for Education and Rehabilitation of the Blind and Visually Impaired, 1703 N. Beauregard Street, Suite 440 Alexandria, VA 22311 Internet: http://aerbvi.org/?page_id=512

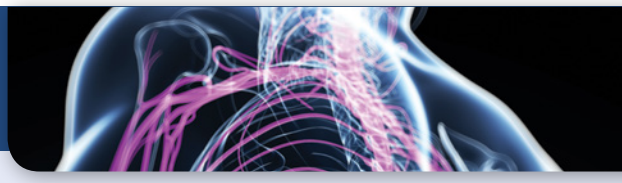
For information about state regulation of behavior analysts contact:

- Association of Professional Behavior Analysts (APBA). 6977 Navajo Road, #176, San Diego, CA 92119. Internet: http://www.apbahome.net/APBALicensure.php

For more information about becoming certified as a behavior analyst, assistant behavior analyst, or behavior technician contact:

- Behavior Analysis Certification Board. 8051 Shaffer Parkway, Littleton, CO 80127. Internet: http://bacb.com/about-behavior-analysis/

LEARNING PORTFOLIO



Issues for Discussion

1. View the video about health educators from CareerInfonet.org. Based on the video, describe work settings, job responsibilities, and necessary personal qualities of Health Educators. Internet: http://www.careerinfonet.org/occ_rep_vidpopup.asp?soccode=211091&matchVideo=21-1091.00
2. View the video from the National Commission for Health Educator Credentialing, Inc. (NCHEC) under *What is a Health Education Specialist?* (Internet: http://www.nchec.org/faqs) What are the advantages to obtaining the CHES/MCHES credential? What are the requirements for each credential?
3. Go to the website, *Rehabilitation and Prosthetic Services for the U.S. Department of Veterans Affairs*, for fact sheets on blind rehabilitation and blind rehabilitation continuum of care. Identify blind rehabilitation specialists that provide service for the VA. Internet: http://www.prosthetics.va.gov/
4. Go to the website, *Autism Speaks*, to learn about insurance laws in your state for coverage of behavior analysts for treatment of ASD. *Autism Insurance Reform*. Autism Speaks. Internet: https://www.autismspeaks.org/state-initiatives

Enrichment Activities

1. View the video, *BlindnessLowVision*, from Western Michigan University to learn more about blindness and careers as a mobility instructor and vision rehabilitation therapist. Internet: https://www.youtube.com/watch?v=IzK8f1x9YPY
2. Go to the *Team Nutrition* website sponsored by the U.S. Department of Agriculture and review training grants awarded to your state (or a nearby state). Does the training grant include classes on nutrition and physical activity? Internet: http://www.fns.usda.gov/tn/2015-training-grants
3. To learn more about autism listen to the podcast on autism spectrum disorders from the Centers for Disease Control and Prevention. Internet:http://www2c.cdc.gov/podcasts/player.asp?f=8631754

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5. National Commission for Health Education Credentialing, Inc. *Overview*. Internet: http://www.nchec.org/overview
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8. Association for Education and Rehabilitation of the Blind and Visually Impaired. *Orientation and Mobility Specialist (O & M)*. Internet: http://aerbvi.org/wordpress/wp-content/uploads/2014/09/AER-OM-Specialist-Flyer-12-13_word .docx
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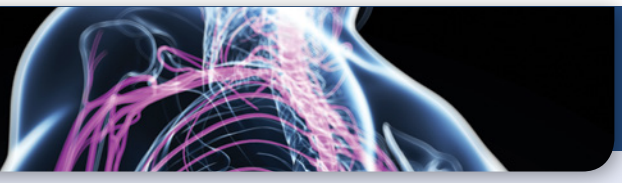
12. U.S. Department of Veteran Affairs. *Blind Rehabilitation Centers and Locations*. Internet: http://www.prosthetics.va.gov/blindrehab/locations.asp
13. American Dental Education Association. *Orientation and Mobility Specialist*. Explorehealthcareers.org. Internet: http://explorehealthcareers.org/en/Career/155/Orientation__Mobility_Specialist#Tab=Overview
14. Association for Education and Rehabilitation of the Blind and Visually Impaired. *Vision Rehabilitation Therapists (VRT): Restoring Independence for Individuals with Vision Loss*. Internet: http://aerbvi.org/wordpress/wp-content/uploads/2014/09/AER-VRT-flyer-12-13_word.docx
15. Behavior Analysis Certification Board (BACB). *BACB Credentials*. Internet: http://bacb.com/credentials/
16. Behavior Analysis Certification Board (BACB). *Approved University Training*. Behavior Analysis Certification Board. Internet: http://info.bacb.com/o .php?page=100358



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17. Association of Professional Behavior Analysts. *Overview of State Laws to Licensure or Otherwise Regulate Practitioners of Applied Behavior Analysis.* August 2015. Internet: http://www.apbahome.net/APBALicensure.php

18. PayScale, Inc. *Board Certified Analyst Salary (United States).* Internet: http://www.payscale.com/ research/ US/ Job = Board_Certified_Behavior _Analyst/ Salary

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CHAPTER 24

Health Services Administration*

Key Terms

Assistant administrators
Associate administrator
Budgets
Chief executive officer (CEO)
Coordinate
Financial viability
Healthcare administrators
Healthcare executives
Marketing
Medical and health services managers
Negotiation
Philosophy
Policies
Programs
Strategic planning

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

ADMINISTRATION

Significant Points

- Job opportunities will be good, especially for applicants with work experience in health care and strong business and management skills.
- A master's degree is the standard credential, although a bachelor's degree is adequate for some entry-level positions.
- Medical and health services managers typically work long hours and may be called at all hours to deal with problems.

The Need for Professional Management

Health care is a business and, like every business, it needs good management to keep the business running smoothly. **Medical and health services managers**, also referred to as **healthcare executives** or **healthcare administrators**, plan, direct, coordinate, and supervise the delivery of health care. These workers are either specialists in charge of a specific clinical department, generalists who manage an entire facility or system, or managers of a physician group practice.

The structure and financing of health care are changing rapidly. Future medical and health services managers must be prepared to deal with the integration of healthcare delivery systems, technological innovations, an increasingly complex regulatory environment, restructuring of work, and an increased focus on preventive care. They will be called on to improve efficiency in healthcare facilities and the quality of the care provided.

Large facilities usually have several **assistant administrators** who aid the top administrator and handle daily decisions. Assistant administrators direct activities in clinical areas, such as nursing, surgery, therapy, and in non-clinical areas such as information technology and health information management.

In smaller facilities, top administrators handle more of the details of daily operations. For example, many nursing home administrators manage personnel, finances, facility operations, and admissions, while also providing resident care.

Clinical managers have training or experience in a specific clinical area and, accordingly, have more specific responsibilities than do generalists. For example, directors of physical therapy are experienced physical therapists, and most health information administrators have a bachelor's degree in health information management. Clinical managers establish and implement **policies**, objectives, and procedures for their departments; evaluate personnel and work quality; develop reports and **budgets**; and **coordinate** activities with other managers.

In group medical practices, managers work closely with physicians. Whereas an office manager might handle business affairs in small medical groups, leaving policy decisions to the physicians themselves, larger groups usually employ a full-time administrator to help formulate business strategies and coordinate day-to-day business.

A small group of 10 to 15 physicians might employ one administrator to oversee personnel matters, billing and collection, budgeting, planning, equipment outlays, and patient flow. A large practice of 40 to 50 physicians might have a chief administrator and several assistants, each responsible for a different area of expertise.

Medical and health services managers in managed care settings perform functions similar to those of their counterparts in large group practices, except that they may have larger staffs to manage. In addition, they might do more community outreach and preventive care than do managers of a group practice.

Some medical and health services managers oversee the activities of a number of hospitals in health systems. Such systems might contain both inpatient and outpatient facilities and offer a wide range of patient services.

Managers in all settings will be needed to improve the quality and efficiency of health care, while controlling costs, as insurance companies and Medicare demand higher levels of accountability. Managers also will be needed to oversee the computerization of patient records and ensure their security as required by law. Additional demand for managers will stem from the need to recruit workers and increase employee retention, to comply with changing regulations, to implement new technology, and to help improve the health of their communities by emphasizing preventive care.

In line with their training and/or experience in a specific clinical area, clinical managers have more specific responsibilities than generalist managers. For example, directors of physical therapy are experienced physical therapists, and most health information administrators have a bachelor's degree in health information management. These managers establish and implement policies, objectives, and procedures for their departments; evaluate personnel and work performance; develop reports and budgets; and coordinate activities with other managers.

Another aspect of professional management is the need to address the extensive oversight and scrutiny to which health facilities are subject. Both past performance and future plans 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 employers of health services managers include medical group practices; outpatient clinics; health maintenance organizations (HMOs); nursing homes; hospices; home health agencies; rehabilitation, community mental health, emergency care, and 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 CEO often speaks before civic groups, promotes public participation in health **programs**, and coordinates the activities of the hospital or facility with those of government or community agencies. Institutional planning is an increasingly important responsibility of chief administrators, who continually must assess the need for services, personnel, facilities, and equipment, and periodically recommend changes such as shutting down a maternity ward 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 healthcare administrator is directly accountable to a board of trustees made up of community leaders who are voted onto the board 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 healthcare 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, including admissions, surgery, clinical laboratory, therapy, emergency medicine, nursing, physical plant, health information services, accounting, and so on. The hospital administrator works with the governing board in establishing general policies and operating **philosophy** and provides direction to the department heads and the assistant administrators (or vice presidents), who implement those policies. The hospital 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 profitable. Administrators represent the hospital 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.

Nursing home administrators need many of the same management skills as hospital administrators. Administrative staffs in nursing homes, however, are typically much smaller than those in hospitals. Nursing home administrators often have only one or two assistant administrators, and sometimes none. As a result, nursing home administrators are involved in day-to-day management decisions much more often than hospital administrators in all but the smallest hospitals. Nursing home administrators wear various hats—personnel director, director of finance, director of facilities, and admissions director, for example. They analyze data and then make daily management decisions in all of these areas. In addition, because many nursing home residents stay for months or even years, administrators must try to create an environment that nourishes residents' psychological, social, and spiritual well-being, as well as tends to their healthcare needs.

In the growing field of group practice management, administrators and managers need to be able to work effectively with the physicians who own the practice. An example of a health services manager meeting with a physician is seen in FIGURE 24.1. Specific job duties vary according to the size of the 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.

FIGURE 24.1 Meeting of health services manager and physician.
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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 of a group practice 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 healthcare 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 healthcare 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 administrators and managers in large medical group practices, plus one additional function—administering what amounts to an insurance company. HMO subscribers pay an annual fee that covers almost all of their 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 work more in the areas of community outreach and preventive care than do managers of a group practice. 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 health systems that may encompass a number of 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 healthcare facilities.

Employment Opportunities

Medical and health services managers held about 333,000 jobs in 2014. About 37% worked in hospitals, and another 20% worked in offices of physicians or in nursing and residential care facilities. Most of the remainder worked in home healthcare services, federal government healthcare facilities, outpatient care centers, insurance companies, and community care facilities for the elderly.

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. A bachelor's degree, however, is adequate for some entry-level positions in smaller facilities and for some entry-level positions at the departmental level within healthcare organizations. In addition, physicians' offices and some other facilities may accept on-the-job experience as a substitute for formal education.

Education and Training

For clinical department heads, a degree and work experience in the appropriate field 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 services 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 2016, 95 schools had accredited programs leading to a master's degree in health services administration, according to the Commission on Accreditation of Healthcare Management Executives (CAHME).[1]

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 graduate programs is keen, and applicants need above-average grades to gain admission.

Graduate degree programs usually last between two and three years. They may include as much as one year of supervised administrative experience and coursework in hospital organization and management, marketing, accounting and budgeting, human resource administration, strategic planning, law and ethics, biostatistics or epidemiology, health economics, and health information systems. Some programs allow students to specialize in one type of facility—hospitals, nursing homes, mental health facilities, or medical groups. Other programs encourage a generalist approach to health administration education. The types of concepts a health services manager must know is seen in the word cloud featured in **FIGURE 24.2**.

Recent 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, multi-facility nursing home corporations, and consulting firms.

FIGURE 24.2 The types of concepts a health services manager must know can be very varied.
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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.

Licensing and Certification

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. Some states also require licenses for administrators in assisted-living facilities. A license is not required in other areas of medical and health services management.

Certification is another option for health services managers. The American College of Medical Practice Executives (ACMPE) offers the credential of a Certified Medical Practice Executive.[2] The Professional Association of Healthcare Office Management (PAHCOM) offers two certification options: one in health information technology called the HIT Certified Manager (HITCM-PP)[3] and one in medical office management called the Certified Medical Manager (CMM).[4] The American College of Healthcare Administrators (ACHA) offers the Certified Nursing Home Administrator (CNHA) and the Certified Assisted Living Administrator (CALA) credentials.[5]

Other Qualifications

Health services managers often are responsible for millions of dollars in facilities and equipment and hundreds of employees. In order to make effective decisions, they need to be open to different opinions and be good at analyzing contradictory information. They must understand finance and information systems and be able to interpret data. They must be able to follow advances in laws, regulations, and healthcare technology. These managers need problem - solving skills so that they can reach creative solutions to complex problems. 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.

Advancement

Health services managers advance by moving into higher-paying positions with more responsibility, such as assistant or **associate administrator**, or by moving to larger facilities. Some experienced managers also may become consultants or professors of healthcare management.

Employment Trends

Employment of medical and health services managers is expected to grow faster than the average for all occupations. A demand for increase in health services overall will be seen as the large baby-boom population ages and requires care, generating a need for additional medical and health services managers.

TABLE 24.1 Projections Data for Medical and Health Services Managers, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Medical and health services managers	333,000	389,300	56,300	17%

Employment Change

Employment of medical and health services managers is expected to grow 17% between 2014 and 2024. Hospitals will continue to employ the most medical and health services managers over the 2014 to 2024 decade. However, the number of new jobs created is expected to increase at a slower rate in hospitals than in many other industries because of the growing use of clinics and other outpatient care sites. Despite relatively slow employment growth in hospitals, a large number of new jobs will be created because of the industry's large size.

Employment will grow fast in offices of health practitioners. Many services previously provided in hospitals will continue to shift to these settings, especially as medical technologies improve. Demand in medical group practice management will grow as medical group practices become larger and more complex.

Medical and health services managers also will be employed by healthcare management companies that provide management services to hospitals and other organizations, and to specific departments such as emergency, information management systems, managed care contract negotiations, and physician recruiting. As insurance companies and Medicare demand higher levels of accountability, medical and health services managers will be needed in all healthcare settings to improve the quality and efficiency of health care while controlling costs, and hospitals will continue to be the largest employers of medical and health services managers over the 2012 to 2024 decade. TABLE 24.1 shows some projection data provided by the U.S. Department of Labor.

TABLE 24.2 Median Annual Earnings in the Industries Employing the Largest Number of Medical and Health Service Managers, 2014

General medical and surgical hospitals	$110,840
Outpatient care centers	$97,400
Offices of physicians	$102,990
Nursing care facilities	$85,730
Home healthcare services	$93,290

Earnings

According to May 2014 data, median annual earnings of medical and health services managers were $92,810. The middle 50% earned between $71,820 and $120,740 per year. The lowest 10% earned less than $55,890, and the highest 10% earned more than $161,150 per year. Median annual earnings in the industries employing the largest number of medical and health services managers are shown in TABLE 24.2. Earnings of health services managers vary by type and size of the facility, as well as by level of responsibility.

Related Occupations

Health services managers have training or experience in both health care 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, 2000 14th St. North, Suite 780, Arlington, VA 22201. Internet: http://www.aupha.org

For a list of accredited graduate programs in health services administration, contact:

- Commission on Accreditation of Health Care Management Educators, 2111 Wilson Blvd., Suite 700, Arlington, VA 22201. Internet: http://www.cahme.org

For information about career opportunities in long-term care administration, contact:

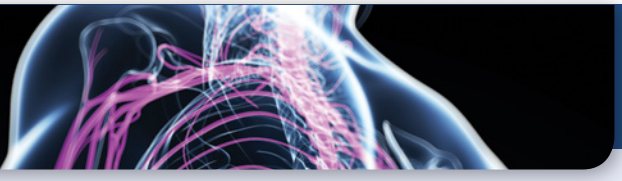
- American College of Health Care Administrators, 1321 Duke St., Suite 400, Alexandria, VA 22314. Internet: http://achca.org

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. Internet: http://www.mgma.com
- American College of Medical Practice Executives, 104 Inverness Terrace East, Englewood, CO 80112. Internet: http://www.acmpe.com

For information about healthcare office managers, contact:

- Professional Association of Health Care Office Managers, 1576 Bella Cruz Dr., Suite 360, Lady Lake, FL 32159. Internet: http://www.pahcom.com



LEARNING PORTFOLIO

Issues for Discussion

1. Graduates of medical and health service management programs have been exposed to numerous specialized areas, including finance, government relations, human resources, information systems, marketing and public affairs, materials management (purchasing of equipment and supplies), medical staff relations, nursing administration, patient care services, and planning and development. Choose which of those areas you believe might be the most challenging to learn and which area might be easiest to learn. Discuss your reasoning with your instructor and classmates.
2. What attribute do you think is most important to possess when working as a health services manager? Why?

Enrichment Activities

1. View the following videos explaining careers in health services management: https://www.youtube.com/watch?v=d6_0MxDMPBw, and https://www.youtube.com/watch?v=B3GMyZ87gMY. Discuss the roles performed by health services managers with your instructor and classmates.
2. Many students have questions about salaries for a chosen career. Review the following video that discusses healthcare administrator salaries: https://www.youtube.com/watch?v=SShO73RQGag. Note how salaries vary according to geographic region in the country, and identify what elements comprise compensation besides salary.

References

1. Commission on Accreditation of Healthcare Management Education. *CAHME Accredited Programs Database*. Internet: http://cahme.org/CAHME/Students/Search_for_an_Accredited_Program/CAHME/Students/Search_for_an_Accredited_Program.aspx?hkey=02b2339c-0679-47e2-8fd2-28c0303dcdc2
2. American College of Medical Practice Executives, *Board Certification Through ACMPE*. Internet: http://www.mgma.com/education-certification/medical-practice-management-certification-through
3. Professional Association of Healthcare Office Management. *HIT Certified Manager*. Internet: https://www.pahcom.com/hitcm-pp/overview.html
4. Professional Association of Healthcare Office Management. *Certified Medical Manager*. Internet: https://www.pahcom.com/cmm/overview.html
5. American College of Healthcare Administrators. *Eligibility Requirements*. Inetnet: https://members.achca.org/index.cfm?fuseaction=Page.ViewPage&PageID=542

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CHAPTER 25

Emergency Medical Technicians and Paramedics*

Key Terms

Advanced airway devices
Advanced emergency medical technician
Electrocardiograms (ECGs)
Emergency equipment
Emergency medical responder
Emergency medical services (EMS)
Emergency medical technician (EMT)
Emergency skills
Endotracheal intubations
First responder
National Registry of Emergency Medical Technicians (NREMT)
Paramedic
Trauma centers
Volunteer EMTs

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor. 2016.

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 healthcare profession.

EMT-PARAMEDICS

Significant Points

- Employment is projected to grow much faster than the average for all occupations.
- Emergency medical technicians and paramedics need formal training and certification or licensure, but requirements vary by state.
- Emergency services function 24 hours a day, so emergency medical technicians and paramedics have irregular working hours.
- Opportunities will be best for those who have earned advanced certifications.

Work Description

People's lives often depend on the quick reaction and competent care of emergency medical technicians (EMTs) and paramedics. Incidents as varied as automobile accidents, heart attacks, slip and falls, childbirth, and gunshot wounds all require immediate medical attention. EMTs and paramedics provide this vital service as they care for and transport the sick or injured to a medical facility.

In an emergency, EMTs and paramedics are typically dispatched by a 911 operator to the scene, where they often work with police and firefighters. Collectively, EMTs, paramedics, police officers, and firefighters are often referred to as **first responders**. Once they arrive, EMTs and paramedics assess the nature of the patient's condition while trying to determine whether the patient has any preexisting medical conditions. Following medical protocols and guidelines, they provide appropriate emergency care and, when necessary, transport the patient. Some paramedics are trained to treat patients with minor injuries at the scene of an accident, or they may treat them at their home, without transporting them to a medical facility. Emergency treatment is carried out under the medical direction of physicians.

EMTs and paramedics may use special equipment, such as backboards, to immobilize patients before placing them on stretchers and securing them in the ambulance for transport to a medical facility. An example of a patient placed on a backboard is seen in FIGURE 25.1. These healthcare workers generally go out in teams. During the transport of a patient, one EMT or paramedic drives while the other monitors the patient's vital signs and gives additional care as needed. Some paramedics work as part of a helicopter's flight crew to transport critically ill or injured patients to hospital **trauma centers**.

FIGURE 25.1 Paramedics placing patient on backboard.

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FIGURE 25.2 EMTs with a patient in an ambulance.
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At the medical facility, EMTs and paramedics help transfer patients to the emergency department, report their observations and actions to emergency department staff, and may provide additional emergency treatment. After each run, EMTs and paramedics replace used supplies and check equipment. If a transported patient had a contagious disease, EMTs and paramedics decontaminate the interior of the ambulance and report cases to the proper authorities.

EMTs and paramedics also provide transportation for patients from one medical facility to another, particularly if they work for private ambulance services. Patients often need to be transferred to a hospital that specializes in their injury or illness or to a nursing home. Beyond these general duties, the specific responsibilities of EMTs and paramedics depend on their level of qualification and training. The **National Registry of Emergency Medical Technicians (NREMT)** certifies emergency medical service providers at four levels: Emergency Medical Responder, Emergency Medical Technician, Advanced Emergency Medical Technician, and Paramedic.[1] Some states, however, have their own certification programs and use distinct names and titles.

The **emergency medical responder** represents the first component of the emergency medical technician system. An EMT trained at this level is prepared to care for patients at the scene of an accident and while transporting patients by ambulance to the hospital under medical direction. The emergency medical responder has the **emergency skills** to assess a patient's condition and manage respiratory, cardiac, and trauma emergencies.

The **emergency medical technician (EMT)** represents the second component of the emergency medical technician system and has more advanced training. EMTs perform interventions with the basic equipment typically found on an ambulance. However, the specific tasks that those certified at this level are allowed to perform vary greatly from one state to another. **Advanced emergency medical technicians** represent the third component of the emergency medical technician system. They have the skills of an EMT, plus the knowledge and skills necessary to operate both the basic and advanced equipment found on a typical ambulance. An example of EMTs with a patient in an ambulance is seen in FIGURE 25.2.

Paramedics represent the fourth component of the emergency medical technician system and provide the most extensive prehospital care. In addition to carrying out the procedures of the other levels, paramedics may administer drugs orally and intravenously, interpret **electrocardiograms** (**ECGs**), perform **endotracheal intubations**, and use monitors and other complex equipment. An example of complex equipment is a heart defibrillator, seen in FIGURE 25.3. As with an advanced EMT, however, what paramedics are permitted to do varies by state.

FIGURE 25.3 Portable defibrillator for cardiac emergencies.
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Work Environment

EMTs and paramedics work both indoors and out, in all types of weather. They are required to do considerable kneeling, bending, and heavy lifting. These workers risk noise-induced hearing loss from sirens and back injuries from lifting patients. In addition, EMTs and paramedics may be exposed to diseases such as hepatitis B and AIDS, as well as violence from mentally unstable patients. The work is not only physically strenuous but can be stressful, sometimes involving life-or-death situations and suffering patients. Nonetheless, many people find the work exciting and challenging and enjoy the opportunity to help others.

EMTs and paramedics employed by fire departments work about 50 hours a week. Those employed by hospitals frequently work between 45 and 60 hours a week, and those in private ambulance services, between 45 and 50 hours. Some of these workers, especially those in police and fire departments, are on call for extended periods. Because emergency services function 24 hours a day, EMTs and paramedics have irregular working hours.

Employment Opportunities

EMTs and paramedics held about 241,200 jobs in 2014. Most career EMTs and paramedics work in metropolitan areas. **Volunteer EMTs** and paramedics are more common in small cities, towns, and rural areas. These individuals volunteer for fire departments, **emergency medical services (EMS)**, or hospitals and may respond to only a few calls per month.

Paid EMTs and paramedics were employed in a number of industries. About 48% worked as employees of private ambulance services. About 29% worked in local government. Another 16% worked in hospitals. The type of work or responsibility within each employment service is as follows:

1. Private ambulance services are usually contracted by private or public organizations for emergency situations.
2. Local government is usually required to provide ambulance emergency medical services associated with the fire and police departments.
3. Hospitals obviously are required to provide the same services for patients in emergency situations.

Educational and Legal Requirements

Generally, a high school diploma and a cardiopulmonary resuscitation (CPR) certificate are required to enter a training program to become an EMT or paramedic. Workers must complete a formal training and certification process. Most of these training programs are postsecondary non-degree award programs that can be completed in less than one year; others last up to two years. Paramedics, however, may need an associate's degree.

Education and Training

A high school diploma and a cardiopulmonary resuscitation certificate are usually required to enroll in a formal emergency medical technician training program. Training is offered at progressive levels: Emergency Medical Responder, Emergency Medical Technician, Advanced Emergency Medical Technician, and Paramedic.

At the emergency medical responder and emergency medical technician levels, coursework 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 provides instruction and practice in dealing with bleeding, fractures, airway obstruction, cardiac arrest, and emergency childbirth. Students learn how to use and maintain common **emergency equipment**, such as backboards, suction devices, splints, oxygen delivery systems, and stretchers. Graduates of approved emergency medical responder or emergency medical technician training programs must pass a written and practical examination administered by the state certifying agency or the NREMT.

At the Advance Emergency Medical Technician level, training requirements vary by state. The nationally defined level typically requires 30 to 350 hours of training based on the scope of practice. Students learn advanced skills, such as the use of **advanced airway devices**, intravenous fluids, and some medications. Advanced EMTs must pass a written and practical examination administered by the state certifying agency or the NREMT.

The most advanced level of training for this occupation is Paramedic. At this level, the caregiver receives training in anatomy and physiology as well as advanced medical skills. Most commonly, the training is conducted in community colleges and technical schools over one to two years and may result in an associate's degree. Such education prepares the graduate to take the NREMT examination and become certified as a paramedic. Extensive related coursework and clinical and field experience is required. Refresher courses and continuing education are available for EMTs and paramedics at all levels.

High school students interested in becoming an EMT or paramedic should take courses in health, biology, anatomy, and physiology. Courses that improve problem-solving skills will assist the future EMT or paramedic.

Licensure

All 50 states require certification for each of the EMT levels. In most states and the District of Columbia, registration with the NREMT is required at some or all levels of certification. Other states administer their own certification examination or provide the option of taking either the NREMT or state examination. To maintain certification, EMTs and paramedics must recertify, usually every two years. Generally, they must be working as an EMT or paramedic and meet a continuing education requirement.

Other Qualifications

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. Strong listening and speaking skills are necessary so that the EMT or paramedic can determine the extent of a patient's illness or injury and give orders and direction for immediate care. Because most situations involve an emergency, EMTs and paramedics must be compassionate, especially with those patients who are in life-threatening situations or experiencing severe emotional or mental distress.

Advancement

Paramedics can become supervisors, operations managers, administrative directors, or executive directors 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 test their interest in health care before training as registered nurses, physicians, or other health workers.

Employment Trends

Employment for EMTs and paramedics is expected to grow faster than the average for all occupations through 2024. Job prospects should be good, particularly in cities and with private ambulance services.

Employment Change

Employment of emergency medical technicians and paramedics is expected to grow by 24% between 2014 and 2024, which is faster than the average for all occupations. Full-time, paid EMTs and paramedics will be needed to replace unpaid volunteers. It is becoming increasingly difficult for emergency medical services to recruit and retain unpaid volunteers because of the amount of training and the large time commitment these positions require. As a result, more paid EMTs and paramedics are needed. Furthermore, as a large segment of the population—aging members of the baby-boom generation—becomes more likely to have medical emergencies, demand will increase for EMTs and paramedics. Demand for part-time, volunteer EMTs and paramedics will continue in rural areas and smaller metropolitan areas.

Job Prospects

Job prospects should be favorable. Many job openings will arise from growth and from the need to replace workers who leave the occupation because of the limited potential for advancement, as well as the modest pay and benefits in private-sector jobs.

Job opportunities should be best in private ambulance services. Competition will be greater for jobs in local government, including fire, police, and independent third-service rescue squad departments, which tend to have better salaries and benefits. As clients and patients expect and demand higher levels of care before arriving at the hospital, EMTs and paramedics who have advanced education and certifications, such as paramedic-level certification, should enjoy the most favorable job prospects. **TABLE 25.1** shows some projections data provided by the U.S. Department of Labor.

Earnings

Earnings of EMTs and paramedics depend on the employment setting and geographic location of their jobs, as well as their training and experience.

Median hourly wages of EMTs and paramedics were $15.24 in May 2014. The middle 50% earned between $12.10 and $20.09. The lowest 10% earned less than $9.95, and the highest 10% earned more than $26.29. Median hourly wages in the industries employing the largest numbers of EMTs and paramedics in May 2014 were $15.51 in other ambulatory healthcare services and $18.76 in local government.

Compared to all occupations, EMTs had a higher percentage of workers who belonged to a union in 2012.[2]

Related Occupations

Other workers in occupations that require quick and level-headed reactions to life-or-death situations are air traffic controllers, firefighters, physician assistants, police and detectives, and registered nurses.

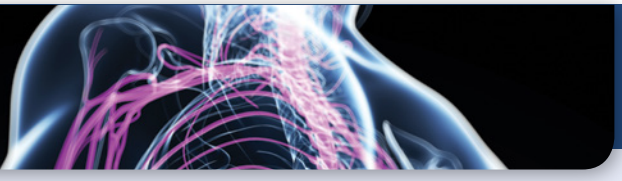
ADDITIONAL INFORMATION

General information about emergency medical technicians and paramedics is available from:

- National Association of Emergency Medical Technicians, P.O. Box 1400, Clinton, MS 39060-1400. Internet: http://www.naemt.org
- National Highway Traffic Safety Administration, Office of Emergency Medical Services, 1200 New Jersey Ave. SE, NTI-140, Washington, DC 20590. Internet: http://www.ems.gov
- National Registry of Emergency Medical Technicians, Rocco V. Morando Bldg., 6610 Busch Blvd., P.O. Box 29233, Columbus, OH 43229. Internet: www.nremt.org

TABLE 25.1 Projections Data for Emergency Medical Technicians and Paramedics, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Emergency medical technicians and paramedics	241,200	299,500	58,500	24%



LEARNING PORTFOLIO

Issues for Discussion

1. All EMTs and paramedics are obligated to treat patients with dignity and respect. At the same time, they sometimes deal with patients in extreme emotional or mental distress. Discuss in class what difficulties, if any, EMTs or paramedics would experience treating such patients with dignity and respect in these situations.
2. When deciding on a career path as an EMT or paramedic, what are some of the more important aspects of the job you should consider? What aspects of your own personality make you well suited or not to pursue a career in this health field?

Enrichment Activities

1. Watch the career video *Paramedic Careers – Life of an EMT* from CareersOutThere.com. Internet: https://www.youtube.com/watch?v=1uB8kN_jeE8. Discuss the role of an EMT and how one copes with the difficulties involved in the job.
2. Use the internet to research your state's requirements for the EMT and paramedic professions discussed in this chapter. List these requirements if they exist. Compare and contrast licensing, certification, and registration for this career with any other career you have examined in this course.

References

1. National Registry of Emergency Medical Technicians. *Become Involved as an EMS Professional*. Internet: https://www.nremt.org/nremt/about/becomeInvolvedInEMS.asp
2. Bureau of Labor Statistics. *Occupational Outlook Handbook 2014–2015 Edition*. Washington, DC: U.S. Department of Labor; 2014. Internet: http://www.bls.gov/oes/#data/

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CHAPTER 26

Radiation Technology*

Key Terms

Beam modification devices
Computed tomography (CT)
CT technologists
Dosimetrists
Fluoroscopy
Ionizing radiation
Magnetic resonance imaging (MRI)
Mammography
MRI technologist
Radiation therapy
Radiographers
Radiologic technicians
Radiologic technologists
Radiologist

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

X-RAYS AND BEYOND

Perhaps the most familiar use of the X-ray is 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 and prevent its further progress. With the application of computer technology to radiology, the field has been revolutionized. Computer-enhanced equipment produces amazing 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.

FIGURE 26.1 X-ray produced by radiographer.
© creo77/Shutterstock

RADIOLOGIC TECHNOLOGISTS AND TECHNICIANS

Significant Points

- Employment is projected to grow faster than average; those with knowledge of more than one diagnostic imaging procedure will have the best employment opportunities.
- Formal training programs in radiography are offered in hospitals or colleges and universities and lead to a certificate, an associate's degree, or a bachelor's degree.
- Most states require licensure, and requirements vary.
- Although hospitals will remain the primary employers, a number of new jobs will be found in physicians' offices and diagnostic imaging centers.

Work Description

Radiologic technologists and technicians perform diagnostic imaging examinations. Radiologic technicians perform imaging examinations like X-rays, while technologists use other imaging modalities such as **computed tomography (CT)**, **magnetic resonance imaging (MRI)**, and mammography.

Radiologic technicians, sometimes referred to as **radiographers**, produce X-ray images (radiographs) of parts of the human body for use in diagnosing medical problems. They prepare patients for radiologic examinations by explaining the procedure, removing jewelry and other articles through which X-rays cannot pass, and positioning patients so that the parts of the body can be appropriately radiographed. To prevent unnecessary exposure to radiation, these workers surround the exposed area with radiation protection devices, such as lead shields, or limit the size of the X-ray beam. Radiographers position radiographic equipment at the correct angle and height over the appropriate area of a patient's body. Using instruments similar to a measuring tape they may measure the thickness of the section to be radiographed and set controls on the X-ray machine to produce radiographs of the appropriate density, detail, and contrast. An example of an X-ray produced through this effort is seen in FIGURE 26.1.

Radiologic technologists and technicians must follow physicians' orders precisely and conform to regulations concerning the use of radiation to protect themselves, their patients, and their coworkers from unnecessary exposure.

In addition to preparing patients and operating equipment, radiologic technologists and technicians keep patient records and adjust and maintain equipment. They also may prepare work schedules, evaluate purchases of equipment, or manage a radiology department.

Radiologic technologists perform more complex imaging procedures. When performing **fluoroscopy**, for example, radiologic technologists prepare a solution for the patient to drink, allowing the **radiologist** (a physician who interprets radiographs) to see soft tissues in the body.

Some radiologic technologists specialize in CT as **CT technologists**. CT scans produce a substantial number of cross-sectional X-rays of an area of the body. From those cross-sectional X-rays, a three-dimensional image is made. The CT uses **ionizing radiation**; therefore, it requires the same precautionary measures that are used with X-rays.

Radiologic technologists also can specialize in magnetic resonance imaging (MRI) as **MRI technologists**. MRI, like CT, produces multiple cross-sectional images to create a three-dimensional image. Unlike CT and X-rays, MRI uses nonionizing radio frequencies to generate image contrast. An example of an MRI machine is seen in FIGURE 26.2.

Radiologic technologists might also specialize in **mammography**. Mammographers use low-dose X-ray systems to produce images of the breast.

In addition to radiologic technologists, others who conduct diagnostic imaging procedures include cardiovascular technologists and technicians, diagnostic medical sonographers, and nuclear medicine technologists.

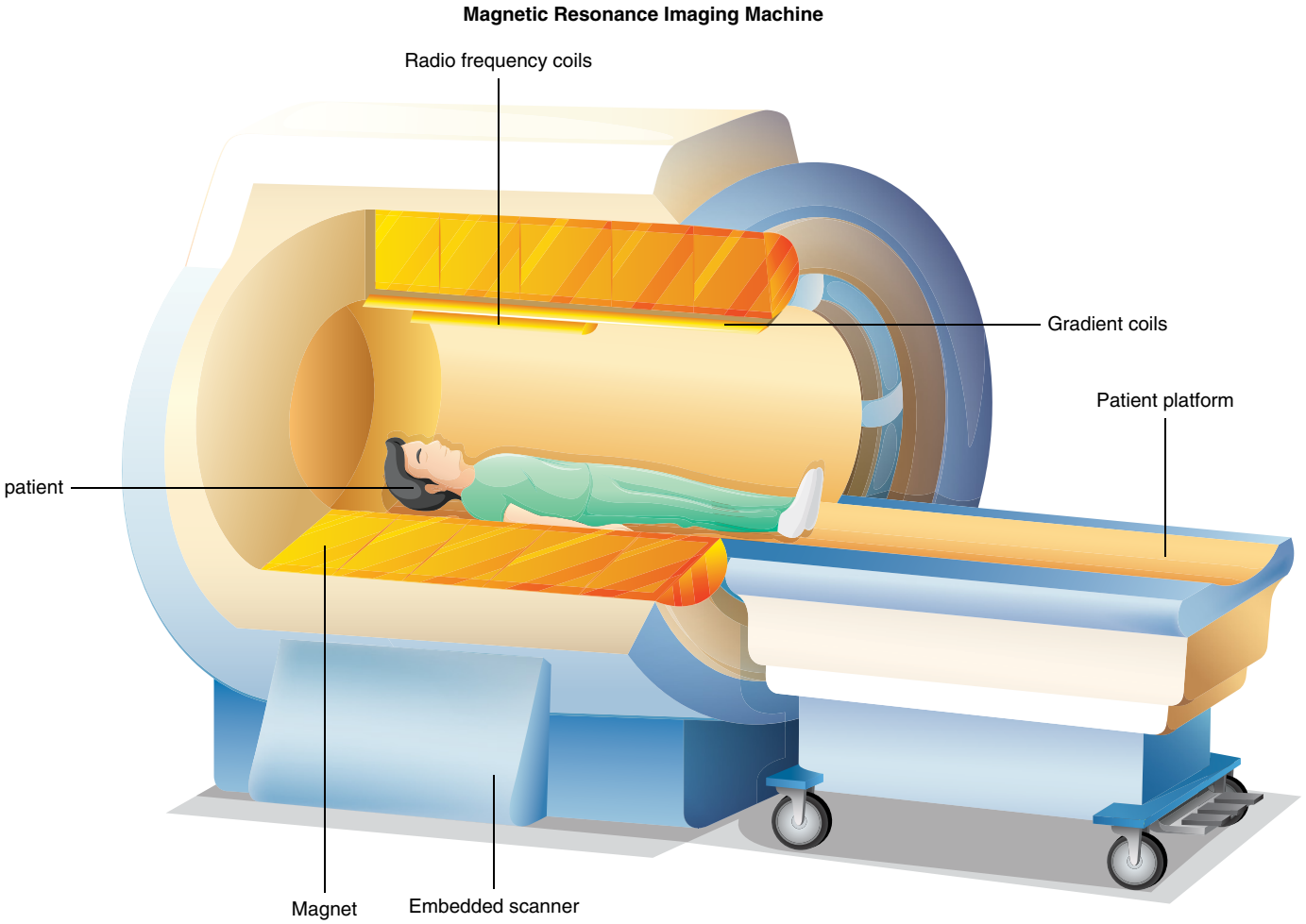

FIGURE 26.2 Magnetic resonance imaging machine.
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Work Environment

Physical stamina is important in this occupation because technologists and technicians are on their feet for long periods and may be required to lift or turn disabled patients. Technologists and technicians work at diagnostic machines, but also may perform some procedures at patients' bedsides. Some travel to patients in large vans equipped with sophisticated diagnostic equipment.

Although radiation hazards exist in this occupation, they are minimized by the use of lead aprons, gloves, and other shielding devices, and by instruments monitoring exposure to radiation. Technologists and technicians wear badges measuring radiation levels in the radiation area, and detailed records are kept on their cumulative lifetime dose.

Most full-time radiologic technologists and technicians work about 40 hours a week. They may, however, have evening, weekend, or on-call hours. Some radiologic technologists and technicians work part time for more than one employer; for those, travel to and from facilities must be considered.

Employment Opportunities

Radiologic technologists held about 197,000 jobs in 2014. About 59% of all jobs were in hospitals. Most other jobs were in offices of physicians; medical and diagnostic laboratories, including diagnostic imaging centers; and outpatient care centers.

Educational and Legal Requirements

There are multiple paths to entry into this profession offered in hospitals or colleges and universities. Most states require licensure, and requirements vary.

Education and Training

Formal training programs in radiography lead to a certificate, an associate's degree, or a bachelor's degree. An associate's degree is the most prevalent level of educational attainment

among radiologic technologists and technicians. Some may receive a certificate. Certificate programs typically last around 21 to 24 months.

The Joint Review Committee on Education in Radiologic Technology (JRCERT) accredits formal training programs in radiography. As of 2014, the committee accredited 725 radiography, radiation therapy, magnetic resonance, and medical dosimetry programs in the United States, the District of Columbia, and Commonwealth of Puerto Rico. Only one state, Alaska, does not have a JRCERT-accredited program. Educational programs are sponsored by a variety of groups, including colleges and universities, for-profit institutions, private institutions, medical facilities, and the military. The programs provide both classroom and clinical instruction in anatomy and physiology, patient care procedures, radiation physics, radiation protection, principles of imaging, medical terminology, positioning of patients, medical ethics, radiobiology, and pathology.

Students interested in radiologic technology should take high school courses in mathematics, physics, chemistry, anatomy, physiology, and biology.

Licensure

Federal legislation protects the public from the hazards of unnecessary exposure to medical and dental radiation by ensuring that operators of radiologic equipment are properly trained. It is up to each state, however, to require the licensure of radiologic technologists. Most states require licensure for practicing radiologic technologists. Licensing requirements vary by state—for specific requirements, contact your state's health board.

Certification

The American Registry of Radiologic Technologists (ARRT) offers voluntary certification for radiologic technologists. In addition, a number of states use ARRT-administered exams for state licensing purposes. To be eligible for certification, technologists must graduate from an ARRT-approved accredited program and pass an examination.[1] Many employers prefer to hire certified radiologic technologists. In order to maintain an ARRT certification, 24 hours of continuing education must be completed every two years.

Other Qualifications

Radiologic technologists and technicians should be sensitive to patients' physical and psychological needs. They must pay attention to detail, follow instructions, and work as part of a team. In addition, operating complicated equipment requires mechanical ability and manual dexterity.

Advancement

With experience and additional training, staff technologists may become specialists, performing CT scanning, MRI, mammography, or bone densitometry. Technologists also may advance, with additional education and certification, to become a radiologist assistant. The ARRT offers specialty certification in many radiologic specialties, as well as a credentialing for radiologist assistants.

Experienced technologists also may be promoted to supervisor, chief radiologic technologist, and, ultimately, department administrator or director. Depending on the institution, courses or a master's degree in business or health administration may be necessary for the director's position.

Some technologists progress by specializing in the occupation to become instructors or directors in radiologic technology educational programs; others take jobs as sales representatives or instructors with equipment manufacturers.

Employment Trends

Employment is projected to grow faster than average. Those with knowledge of more than one diagnostic imaging procedure—such as CT, MRI, and mammography—will have the best employment opportunities.

Employment Change

Employment of radiologic technologists is expected to increase by about 9% from 2014 to 2024, faster than the average for all occupations. As the population grows and ages, there will be an increasing demand for diagnostic imaging. With age comes an increased incidence of illness and injury, which often requires diagnostic imaging for diagnosis. In addition to diagnosis, diagnostic imaging is used to monitor the progress of disease treatment. With the increasing success of medical technologies in treating disease, diagnostic imaging will increasingly be needed to monitor the progress of treatment.

The extent to which diagnostic imaging procedures are performed largely depends on cost and reimbursement considerations. However, accurate, early disease detection allows for lower cost of treatment in the long run, which many third-party payers find favorable.

Although hospitals will remain the principal employer of radiologic technologists, a number of new jobs will be found in offices of physicians and diagnostic imaging centers. As technology advances, many imaging modalities are becoming less expensive and more feasible to have in physicians' offices.

Job Prospects

In addition to job growth, job openings also will arise from the need to replace technologists who leave the occupation. Those with knowledge of more than one diagnostic imaging procedure—such as CT, MRI, and mammography—will have the best employment opportunities as employers seek to control costs by using multicredentialed employees.

TABLE 26.1 Projections Data for Radiologic Technologists and Technicians, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Radiologic technologists and technicians	197,000	214,200	17,200	9%

Demand for radiologic technologists and technicians can tend to be regional, with some areas having great demand, while other areas are saturated. Technologists and technicians willing to relocate may have better job prospects.

CT is continuing to become a frontline diagnosis tool. Instead of taking X-rays to decide whether a CT is needed, as was the practice before, it is often the first choice for imaging because of its accuracy. MRI also is increasingly used. Technologists with credentialing in either of these specialties will be very marketable to employers. TABLE 26.1 shows some projection data provided by the U.S. Department of Labor.

Earnings

The median annual wage of radiologic technologists was $55,870 in May 2014. The middle 50% earned between $45,280 and $68,420. The lowest 10% earned less than $37,610, and the highest 10% earned more than $80,080. Median annual wages in the industries employing the largest numbers of radiologic technologists in 2014 are shown in TABLE 26.2.

Related Occupations

Radiologic technologists operate sophisticated equipment to help physicians, dentists, and other health practitioners diagnose and treat patients. Workers in related healthcare occupations include cardiovascular technologists and technicians, diagnostic medical sonographers, nuclear medicine technologists, and radiation therapists.

TABLE 26.2 Median Annual Earnings in the Industries Employing the Largest Number of Radiologic Technologists, May 2014

Medical and diagnostic laboratories	$58,030
Federal executive branch	$60,040
General medical and surgical hospitals	$58,610
Outpatient care centers	$57,830
Offices of physicians	$53,560

Additional Information

For information on careers in radiologic technology, contact:

- American Society of Radiologic Technologists, 15000 Central Ave. SE, Albuquerque, NM 87123. Internet: http://www.asrt.org

For the current list of accredited education programs in radiography, contact:

- Joint Review Committee on Education in Radiologic Technology, 20 N. Wacker Dr., Suite 2850, Chicago, IL 60606-3182. Internet: http://www.jrcert.org

For certification information, contact:

- American Registry of Radiologic Technologists, 1255 Northland Dr., St. Paul, MN 55120-1155. Internet: http://www.arrt.org

RADIATION THERAPISTS

Significant Points

- A bachelor's degree, associate's degree, or certificate in radiation therapy is generally required.
- Employment is projected to grow much faster than the average for all occupations.
- Good job opportunities are expected.
- Earnings are relatively high.

Work Description

Radiation therapy is used to treat cancer in the human body. As part of a medical radiation oncology team, radiation therapists use machines called linear accelerators to administer radiation treatment to patients. Linear accelerators are most commonly used in a procedure called external beam therapy, which projects high-energy X-rays at targeted cancer cells. As the X-rays collide with human tissue, they produce highly energized ions that can shrink and eliminate cancerous tumors. Radiation therapy is sometimes used as the sole treatment for cancer, but it is usually used in conjunction with chemotherapy or surgery.

Professional Profiles

Name: Nicole, RT(T)
Title: Radiation Therapist RT(T)
Education: BS in Radiation Therapy

Q: Tell us about your job and the organization in which you work.

A: I am a radiation therapist at an outpatient cancer treatment center, located on the campus of a major county hospital. I have worked at this facility for a little over four years, and this career is beyond rewarding to me. I deliver radiation treatments to cancer patients daily, using treatment machines called linear accelerators. These machines electrically produce photon and electron radiation, which is then delivered to the patient through a shaped beam, according to tumor location.

I also work with patients needing HDR (high-dose radiation) and LDR (low-dose radiation) treatments, in which a live radioactive source is placed inside the patient in the necessary treatment area. Some of these cases may be performed in a procedure room; other cases may require an operating room.

In addition to their direct treatment, I am also involved in the patient's simulation. During the simulation, I will find the best possible position for the patient to be in for treatment. This includes creating necessary immobilization devices and placing any appropriate positioning marks on the patient. The patient is then imaged in this position for the radiation oncologist and dosimetrists (treatment planners) to derive a treatment plan.

Q: Describe a typical work day.

A: I treat from 20 to 30 patients on a daily basis. I position the patient on the treatment table, using appropriate immobilization devices, positioning marks, and any other special instructions from the radiation oncologist or dosimetrists. Next, I perform any imaging required to verify patient position and ensure only the targeted area will receive radiation. This can be done with films, fluoroscopy, CT imaging, or a number of other image-guidance technologies. After verifying patient position and making any necessary adjustments, the patient is then treated.

Q: Why did you choose this profession?

A: I started out majoring in a different healthcare field. Sometimes it's hard to know exactly what you want to do until you figure out what you don't want to do. I knew I wanted a career in health care, so I explored until I found a career that fit my passions and interests.

Q: What do you like most about this profession?

A: I love the technical side but also the compassionate side of this profession. I like problem-solving and being challenged, working with different machines and gadgets. But most of all I care for people, and that's why I do what I do.

Q: What kind of training is involved in this field and how long does it take?

A: Radiation therapy is a bachelor's's degree, most commonly beginning with an associate's degree in radiology. After completing the program, the ARRT (American Registry of Radiologic Technologists) requires you take and pass the radiation therapy registry exam to become a certified and registered radiation therapist. Coursework includes radiobiology, radiophysics, radiation safety, treatment planning and delivery, clinical concepts, and patient care. Along with the didactic coursework, students are required to complete at least nine months of clinical work where they will complete different competency tests within the scope of practice.

Q: Name and explain the academic training that most prepared you for this profession?

A: The scientific coursework is absolutely necessary, but the clinical work is what prepares you most for your career as a therapist. Not only are you able to apply classroom knowledge, but you also learn the flow of a radiation therapy department; how to work as a team alongside radiation oncologists, dosimetrists, nurses, and fellow therapists; and how to effectively communicate with patients. All of this is vital in the job of an RT.

Q: What do you wish you had known in high school/college about pursuing this career?

A: I wish I had known this field existed in high school! I feel that a lot of students don't realize all of the options and opportunities available within health care, and I was no different. Talk to an academic counselor, and do some digging. Most important: job shadow, job shadow, job shadow!

Q: What skills are essential for being effective in this career?

A: Really take advantage of your clinical time. Don't be afraid to ask questions! Stay professional. It's easy to get comfortable and mesh into the team at your clinic, but every day is a job interview, and your behavior and attitude will be remembered first before anything else .

Before treatment can begin, the oncology team has to develop a treatment plan. To create this plan, the radiation therapist must first use an X-ray imaging machine or CT scan to pinpoint the location of the tumor. Then, a radiation oncologist (a physician who specializes in therapeutic radiology) and a radiation physicist (a worker who calibrates the linear accelerator simulator) determine the best way to administer treatment. The therapist completes the plan by positioning the patient and adjusting the linear accelerator simulator to the specifications developed by the team, and then recording the details so that those conditions can be replicated during treatment. The therapist later explains the treatment plan to the patient and answers any questions that the patient may have. An example of a linear accelerator simulator is seen in **FIGURE 26.3**.

The next step in the process is treatment. To begin each treatment session, the radiation therapist uses the guidelines developed during the planning phase to position the patient and adjust the linear accelerator. Then, from a separate room that is protected from the X-ray radiation, the therapist operates the linear accelerator and monitors the patient's condition through a TV monitor and an intercom system. Treatment can take anywhere from 10 to 30 minutes.

During the treatment phase, the radiation therapist monitors the patient's physical condition to determine whether the patient is having any adverse reactions to the treatment. The therapist must also be aware of the patient's emotional well-being. Because many patients are under stress and are emotionally fragile, it is important for the therapist to maintain a positive attitude and provide emotional support.

Radiation therapists keep detailed records of their patients' treatments. These records include information such as the dose of radiation used for each treatment, the total amount of radiation used to date, the area treated, and the patient's reactions. Radiation oncologists and **dosimetrists** (technicians who calculate the dose of radiation that will be used for treatment) review these records to ensure that the treatment plan is working, to monitor the amount of radiation exposure that the patient has received, and to keep side effects to a minimum. Therapists also may assist dosimetrists with routine aspects of dosimetry, the process used to calculate radiation dosages.

Work Environment

Radiation therapists work in hospitals, physician offices, outpatient centers, or in cancer treatment centers. These places are clean, well lit, and well ventilated. Therapists do a considerable amount of lifting and must be able to help disabled patients get on and off treatment tables. They spend most of their time on their feet.

Radiation therapists generally work 40 hours a week, and unlike workers in some other healthcare occupations, they normally work only during the day because most procedures are scheduled in advance. Because radiation therapy emergencies do occur, some therapists are required to be on call and may have to work outside of their normal hours.

Working with cancer patients can be stressful, but many radiation therapists also find it rewarding. Because they work around radioactive materials, radiation therapists take great

FIGURE 26.3 Radiation therapist with linear accelerator simulator.
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care to ensure that they are not exposed to dangerous levels of radiation. By following standard safety procedures, radiation therapists can prevent overexposure.

Employment Opportunities

Radiation therapists held about 16,600 jobs in 2014. About 61% worked in hospitals, and about 23% worked in the offices of physicians. A small proportion worked in outpatient care centers and medical and diagnostic laboratories.

Educational and Legal Requirements

A bachelor's degree, associate's degree, or certificate in radiation therapy generally is required. Many states require radiation therapists to be licensed, and most employers require certification. With experience, therapists can advance to managerial positions.

Education and Training

Employers usually require applicants to complete an associate's or a bachelor's degree program in radiation therapy. Individuals also may become qualified by completing an associate's or a bachelor's degree program in radiography, which is the study of radiological imaging, and then by completing a 12-month certificate program in radiation therapy. Radiation therapy programs include core courses on radiation therapy procedures and the scientific theories behind them. In addition, such programs often include courses on human anatomy and physiology, physics, algebra, precalculus, writing, public speaking, computer science, and research methodology. In 2015, there were 94 radiation therapy programs in the United States and 17 abroad that were accredited by the American Registry of Radiologic Technologists (ARRT).[2]

Licensure

In 2014, 33 states required radiation therapists to be licensed by a state accrediting board. Licensing requirements vary by state, but many states require applicants to pass the ARRT certification examination. Further information is available from individual state licensing offices.

Certification

Some states, as well as many employers, require radiation therapists to be certified by the ARRT. To become ARRT certified, an applicant must complete an accredited radiation therapy program, adhere to ARRT ethical standards, and pass the ARRT certification examination. The examination covers radiation protection and quality assurance, clinical concepts in radiation oncology, treatment planning, treatment delivery, and patient care and education. Candidates also must demonstrate competency in several clinical practices including patient care activities; simulation procedures; dosimetry calculations; fabrication of **beam modification devices**; low-volume, high-risk procedures; and the application of radiation.

ARRT certification is valid for one year, after which therapists must renew their certification. Requirements for renewal include abiding by the ARRT ethical standards, paying annual dues, and satisfying continuing education requirements. Continuing education requirements must be met every two years and include either the completion of 24 course credits related to radiation therapy or the attainment of ARRT certification in a discipline other than radiation therapy. However, states or employers that require initial certification may not require certification renewal.

Other Qualifications

All radiation therapists need good communication skills because their work involves a great deal of interaction with patients. Individuals interested in becoming radiation therapists should be psychologically capable of working with cancer patients. They should be caring and empathetic because they work with patients who are ill and under stress. They should be able to keep accurate, detailed records. They also should be physically fit because they work on their feet for long periods and lift and move disabled patients.

Advancement

Experienced radiation therapists may advance to manage radiation therapy programs in treatment centers or other healthcare facilities. Managers generally continue to treat patients while taking on management responsibilities. Other advancement opportunities include teaching, technical sales, and research. With additional training and certification, therapists also can become dosimetrists, who use complex mathematical formulas to calculate proper radiation doses.

Employment Trends

Employment is expected to increase much faster than average, and job prospects should be good.

Employment Change

Employment of radiation therapists is projected to grow by 14% between 2014 and 2024, which is much faster than the average for all occupations. The growing older adult population is expected to cause an increase in the number of people needing treatment. In addition, as radiation technology becomes safer and more effective, it will be prescribed more often, leading to an increased demand for radiation therapists. Growth is likely to be rapid across all practice settings, including hospitals, physicians' offices, and outpatient centers.

TABLE 26.3 Projections Data for Radiation Therapists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Radiation therapists	16,600	18,900	2,300	14%

Job Prospects

Job prospects are expected to be good. Job openings will result from employment growth and from the need to replace workers who retire or leave the occupation for other reasons. Applicants with a bachelor's degree and related work experience may have the best opportunities. TABLE 26.3 shows some projections data from the U.S. Department of Labor.

Earnings

Median annual wages of radiation therapists were $80,090 in May 2014. The middle 50% earned between $64,930 and $97,190. The lowest 10% earned less than $53,590, and the highest 10% earned more than $118,180. Some employers also reimburse their employees for the cost of continuing education.

Related Occupations

Other occupations that administer medical treatment to patients include cardiovascular technologists and technicians, dental hygienists, diagnostic medical sonographers, nuclear medicine technologists, nursing and psychiatric aides, physical therapist assistants and aides, radiologic technologists and technicians, and registered nurses.

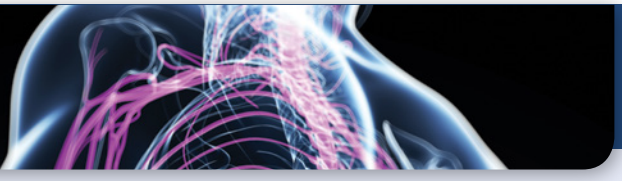
Additional Information

Information on certification by the American Registry of Radiologic Technologists and on accredited radiation therapy programs may be obtained from:

- American Registry of Radiologic Technologists, 1255 Northland Dr., St. Paul, MN 55120. Internet: http://www.arrt.org

Information on careers in radiation therapy may be obtained from:

- American Society of Radiologic Technologists, 15000 Central Ave. SE, Albuquerque, NM 87123. Internet: http://www.asrt.org



LEARNING PORTFOLIO

Issues for Discussion

1. Review the requirements for becoming a radiologic technician and a radiation therapist. Compare the requirements for preparing for these two careers in terms of length of training, cost of training, job opportunities, and lifetime income. Which of these careers best matches your career goals?
2. Several leading agencies, such as the Environmental Protection Agency and the International Agency for Research on Cancer, classify X-rays as cancer-causing agents. By following standard safety procedures, radiation therapists can prevent overexposure to these agents. Discuss whether the risks associated with this exposure would influence your choice of career as a radiation therapist.

Enrichment Activities

1. The history of X-rays goes back to the late nineteenth century. Create a timeline (either as a narrative piece, a poster, or an infographic) tracing the progression of this science and include the names of key theorists and advancements in the field.
2. Many individuals who will receive radiation therapy are concerned about the side effects of treatment. Download the pamphlet entitled: *Radiation Therapy and You* from the National Cancer Institute, a division of the National Institutes for Health, see: http://www.cancer.gov/Publications/patient-education/radiation-therapy-and-you. Review the ways by which an individual can manage the side effects of radiation therapy, including how to monitor foods and liquids that play a role with these side effects.

References

1. American Association of Radiologic Technicians. *Initial AART Certification and Registration*. Internet: https://www.arrt.org/Certification
2. American Registry of Radiologic Technologists. *Radiation Therapy Schools*. Internet: https://www.arrt.org/Education/Educational-Programs

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CHAPTER 27

Diagnostics and Related Technology*

Key Terms

Abdominal sonographer
Breast sonographer
Cardiology technologist
Diagnostic imaging
Diagnostic medical sonography
Echocardiographer
Electrocardiogram (ECG)
Electrocardiograph technician
Gamma scintillation camera
High-frequency transducers
Holter monitoring
Invasive cardiology
Magnetic resonance scanners
Neurosonographer
Noninvasive procedure
Nuclear cardiology (NCT)
Nuclear medicine
Obstetric and gynecologic sonographer
Positron emission scanners
Positron emission tomography (PET)
Radionuclides
Radiopharmaceuticals
Sonographers
Stress testing
Surgical technologist
Transesophageal echocardiography
Ultrasound machines
Vascular technologist

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

INTRODUCTION

The rapidly growing use of imaging techniques that do not involve X-rays has transformed the healthcare field. 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. The impact of these imaging techniques has resulted in the creation of new terminology and a number of new roles in healthcare.

DIAGNOSTIC MEDICAL SONOGRAPHERS

Significant Points

- Job opportunities should be favorable.
- Employment will grow as sonography becomes an increasingly attractive alternative to radiological procedures.
- Hospitals employ about 68% of all sonographers.
- Sonographers may receive education and training in hospitals, vocational-technical institutions, colleges and universities, or the armed forces.

Work Description

Remarkable strides have occurred in the development of imaging equipment that does not involve the use of radiation, thereby reducing the risk of adverse side effects. Examples include **ultrasound machines**, which use sound waves; **magnetic resonance scanners**, which use radio waves; and **positron emission scanners**. 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.

Diagnostic imaging embraces several procedures that aid in diagnosing ailments. The most familiar procedures are the X-ray and magnetic resonance imaging (MRI); however, not all imaging technologies use ionizing radiation or radio waves. Sonography, or ultrasonography, uses sound waves to generate an image for the assessment and diagnosis of various medical conditions. Sonography commonly is associated with obstetrics and the use of ultrasound imaging during pregnancy, but this technology has many other applications in the diagnosis and treatment of medical conditions throughout the body. Concepts associated with sonography are seen in FIGURE 27.1.

Diagnostic medical **sonographers** use special equipment to direct nonionizing, high-frequency sound waves into areas of the patient's body. Sonographers operate the equipment, which collects reflected echoes and forms an image that may be videotaped, transmitted, or photographed for interpretation and diagnosis by a physician.

Sonographers begin by explaining the procedure to the patient and recording any medical history that may be

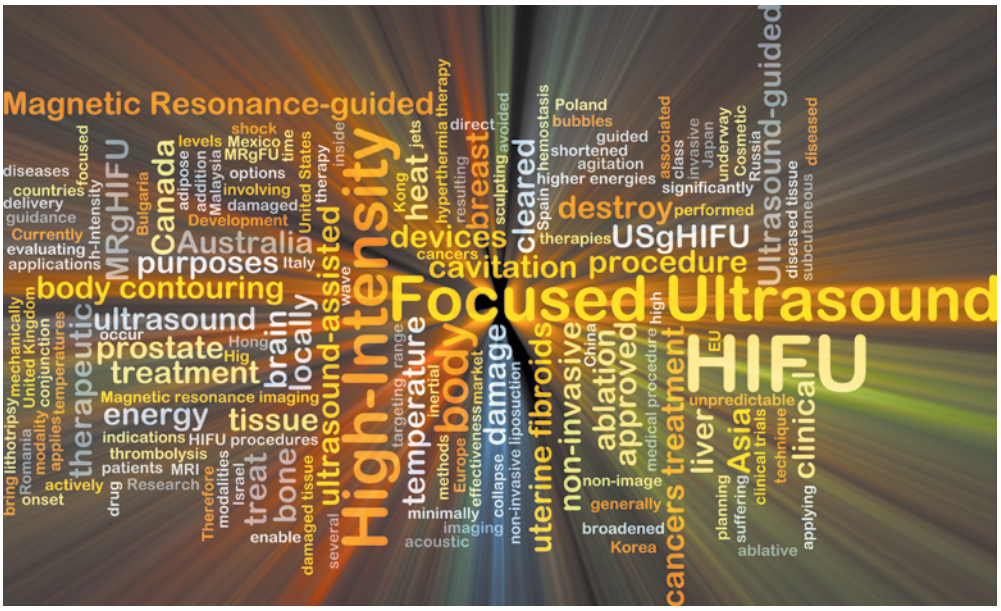

FIGURE 27.1 Concepts associated with sonography.

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FIGURE 27.2 Pregnant woman undergoing ultrasound.
©monkeybusinessimages/iStockPhoto

relevant to the condition being viewed. They then select appropriate equipment settings and direct the patient to move into positions that will provide the best view. To perform the exam, sonographers use a transducer, which transmits sound waves in a cone or rectangle-shaped beam. Although techniques vary with the area being examined, sonographers usually spread a special gel on the skin to aid the transmission of sound waves.

Viewing the screen during the scan, sonographers look for subtle visual cues that contrast healthy areas with unhealthy ones. They decide whether the images are satisfactory for diagnostic purposes and select which ones to store and show to the physician. Sonographers take measurements, calculate values, and analyze the results in preliminary findings for the physicians.

In addition to working directly with patients, diagnostic medical sonographers keep patient records and adjust and maintain equipment. They also may prepare work schedules, evaluate equipment purchases, or manage a sonography or diagnostic imaging department.

Diagnostic medical sonographers may specialize in obstetric and gynecologic sonography (the female reproductive system), abdominal sonography (the liver, kidneys, gallbladder, spleen, and pancreas), neurosonography (the brain), or breast sonography. In addition, sonographers may specialize in vascular sonography or cardiac sonography.

Obstetric and gynecologic sonographers specialize in the imaging of the female reproductive system. Included in the discipline is one of the better-known uses of sonography: examining the fetus of a pregnant woman to track the baby's growth and health. They work closely with physicians in detecting congenital birth defects. An example of a patient undergoing an obstetrical ultrasound is seen in **FIGURE 27.2**.

Abdominal sonographers inspect a patient's abdominal cavity to help diagnose and treat conditions primarily involving the gallbladder, bile ducts, kidneys, liver, pancreas, spleen, and male reproductive system. Abdominal sonographers also are able to scan parts of the chest, although echocardiographers usually perform studies of the heart using sonography. An example of abdominal sonography is seen in **FIGURE 27.3**.

FIGURE 27.3 Patient undergoing abdominal ultrasound.
©zlikovec/Shutterstock

Neurosonographers focus on the nervous system, including the brain. In neonatal care, neurosonographers study and diagnose neurological and nervous system disorders in premature infants. They also may scan blood vessels to check for abnormalities indicating a stroke in children diagnosed with sickle-cell anemia. Like other sonographers, neurosonographers operate transducers to perform the sonogram, but use frequencies and beam shapes different from those used by obstetric and abdominal sonographers.

Breast sonographers use sonography to study diseases of the breast. Sonography aids mammography in the detection of breast cancer. Breast sonography can also track tumors, blood supply conditions, and assist in the accurate biopsy of breast tissue. Breast sonographers use **high-frequency transducers**, made exclusively to study breast tissue.

Work Environment

Sonographers typically work in clean and well-maintained healthcare facilities. They usually work at diagnostic imaging machines in darkened rooms, but also may perform procedures at patients' bedsides. Sonographers may be on their feet for long periods of time and may have to lift or turn disabled patients. In addition, the nature of their work can put sonographers at an increased risk for musculoskeletal disorders such as carpal tunnel syndrome, or neck, back, and eye strain. The increasing use of ergonomically correct equipment, combined with an increasing awareness of potential problems, will help to minimize such risks.

Some sonographers work as contract employees and may travel to several different healthcare facilities within a given area. Similarly, some sonographers travel with mobile imaging service providers and bring mobile diagnostic imaging services to patients in areas who otherwise lack access to them.

Most full-time sonographers work about 40 hours a week. Hospital-based sonographers may have evening and weekend hours, including times when they are on call and must be ready to report to work on short notice.

Employment Opportunities

Diagnostic medical sonographers held about 60,700 jobs in 2014. About 68% of all sonographer jobs were in public and private hospitals. The remainder worked typically in physicians' offices, medical and diagnostic laboratories, and outpatient care centers.

Educational and Legal Requirements

Employers hiring in **diagnostic medical sonography** recognize and accept several levels of education and methods of acquiring it. Although no one level of education is preferred, employers do prefer registered sonographers who trained in accredited programs.

Education and Training

Several avenues exist for entry into the field of diagnostic medical sonography. Sonographers may train in hospitals, vocational-technical institutions, colleges and universities, or the armed forces. Some training programs prefer applicants with a background in science or experience in other healthcare professions. Some training programs also may consider high school graduates with courses in mathematics and science, as well as applicants with liberal arts backgrounds, but this practice is infrequent.

Colleges and universities offer formal training in both two- and four-year programs, culminating in an associate's or a bachelor's degree. Two-year programs are most prevalent. Course work includes classes in anatomy, physiology, instrumentation, basic physics, patient care, and medical ethics.

Employers also accept a few one-year programs, some of which result in a certificate, as appropriate education. These programs typically are satisfactory education and training for workers already in health care who seek to increase their marketability by training in sonography. These programs are not accredited.

The Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredited 207 diagnostic medical sonography training programs in 2015.[1] These programs typically are the formal training programs offered by colleges and universities. Some hospital programs are accredited as well.

Certification and Other Qualifications

Although no state requires licensure in diagnostic medical sonography, organizations such as the American Registry for Diagnostic Medical Sonographers (ARDMS) certify the skills and knowledge of sonographers through credentialing, including registration. Registration provides an independent, objective measure of an individual's professional standing, and many employers prefer to hire registered sonographers. Some insurance providers will only pay for a patient's ultrasound services if it was provided by a certified sonographer. Sonographers registered by the ARDMS are referred to as registered diagnostic medical sonographers (RDMS). Registration with the ARDMS requires passing a general physical principles and instrumentation examination, in addition to passing an exam in a specialty such as obstetric and gynecologic sonography, abdominal sonography, or neurosonography. Sonographers must complete a required number of continuing education hours to maintain registration with the ARDMS and to stay abreast of technological advancements related to the occupation.[2]

Sonographers need good communication and interpersonal skills because they must be able to explain technical procedures and results to their patients, some of whom may be nervous about the exam or the problems it may reveal. Good hand-eye coordination is particularly important to obtaining quality images. Sonographers should also enjoy learning because continuing education is the key to

them staying abreast of the ever-changing field of diagnostic medicine. A background in mathematics and science is helpful for sonographers as well.

Advancement

Sonographers specializing in one particular discipline often seek competency in other specialties. For example, obstetric sonographers might seek training in abdominal sonography to broaden their opportunities and increase their marketability. Sonographers may also have advancement opportunities in education, administration, research, sales, or technical advising.

Employment Trends

Faster-than-average employment growth is expected. Job opportunities should be favorable.

Employment Change

As the U.S. population ages, demand for diagnostic imaging and therapeutic technology will increase. Employment of diagnostic medical sonographers is expected to increase by about 26% through 2024—faster than the average for all occupations.

Additional job growth also is expected as patients seek safer treatment methods and sonography becomes an increasingly attractive alternative to radiologic procedures. Unlike most diagnostic imaging methods, sonography does not involve radiation, so harmful side effects and complications from repeated use are less likely for both the patient and the sonographer. Sonographic technology is expected to evolve rapidly and to spawn many new sonography procedures, such as 3-D and 4-D sonography, for use in obstetric and ophthalmologic diagnosis. High costs and necessary approval by the federal government, however, may limit the rate at which some promising new technologies are adopted.

Hospitals will remain the principal employer of diagnostic medical sonographers. Employment is expected to grow more rapidly in physicians' offices and in medical and diagnostic laboratories, including diagnostic imaging centers. Healthcare facilities such as these are expected to increase very rapidly because of 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.

With members of the large baby-boom generation remaining more active later in life, the need to diagnose medical conditions associated with aging, e.g., blood clots and tumors, will likely increase. The expansion of health insurance as a result of the Affordable Care Act will allow more patients to have access to health insurance, likely increasing the use of imaging technology in making a diagnosis. Diagnostic medical sonographers will be needed to use and maintain the equipment employed for diagnosis and treatment.

Job Prospects

Job opportunities should be favorable. In addition to job openings from growth, some openings will arise from the need to replace sonographers who retire or leave the occupation permanently for some other reason. Pain caused by musculoskeletal disorders has made it difficult for some sonographers to perform well. Some are forced to leave the occupation early because of such disorders. TABLE 27.1 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual earnings of diagnostic medical sonographers were $67,530 in May 2014. The middle 50% of sonographers earned wages between $55,850 and $79,410 per year. The lowest 10% earned less than $46,930, and the highest 10% earned more than $93,850. Median annual wages of diagnostic medical sonographers in May 2014 were $67,510 for those employed in offices of physicians and $68,860 for those working in general medical and surgical hospitals.

Related Occupations

Diagnostic medical sonographers operate sophisticated equipment to help physicians and other health practitioners diagnose and treat patients. Workers in related occupations include cardiovascular technologists and technicians, clinical laboratory technologists and technicians, nuclear medicine technologists, and respiratory therapists.

TABLE 27.1 Projections Data for Diagnostic Medical Sonographers, 2014–2024

			Change, 2014–2024	
Occupational Title	Employment, 2014	Projected Employment, 2024	Number	Percentage
Diagnostic medical sonographers	60,700	76,700	16,000	26%

Additional Information

For information on a career as a diagnostic medical sonographer, contact:

- Society of Diagnostic Medical Sonography, 2745 Dallas Pkwy., Suite 350, Plano, TX 75093-8730. Internet: http://www.sdms.org

For information on becoming a registered diagnostic medical sonographer, contact:

- American Registry for Diagnostic Medical Sonography, 51 Monroe St., Plaza East 1, Rockville, MD 20850-2400. Internet: http://www.ardms.org

For certification information, contact:

- American Registry of Radiologic Technologists, 1255 Northland Dr., St. Paul, MN 55120-1155. Internet: http://www.arrt.org/

For more information on ultrasound in medicine, contact:

- American Institute of Ultrasound in Medicine, 14750 Sweitzer Ln., Suite 100, Laurel, MD 20707-5906. Internet: http://www.aium.org

For a current list of accredited education programs in diagnostic medical sonography, contact:

- Joint Review Committee on Education in Diagnostic Medical Sonography, 6021 University Boulevard, Suite 500, Ellicott City, MD 21043. Internet: http://www.jrcdms.org
- Commission on Accreditation for Allied Health Education Programs, 1361 Park St., Clearwater, FL 33756. Internet: http://www.caahep.org

CARDIOVASCULAR TECHNOLOGISTS AND TECHNICIANS

Significant Points

- Employment is expected to grow much faster than average.
- Technologists and technicians with multiple professional credentials, trained to perform a wide range of procedures, will have the best prospects.
- About 68% of jobs are in hospitals.
- Workers typically need a two-year associate's degree at a junior or community college; most employers also require a professional credential.

Work Descriptions

Cardiovascular technologists and technicians assist physicians in diagnosing and treating cardiac (heart) and peripheral vascular (blood vessel) ailments. Cardiovascular technologists and technicians schedule appointments, perform ultrasound or cardiovascular procedures, review doctors' interpretations and patient files, and monitor patients' heart rates. They also operate and maintain testing equipment, explain test procedures, and compare test results to a standard to identify problems. Other day-to-day activities vary significantly between specialties. Cardiovascular technologists may specialize in any of three areas of practice: **invasive cardiology**, echocardiography, or vascular technology.

Invasive Cardiology

Cardiovascular technologists specializing in invasive procedures are called **cardiology technologists**. They assist physicians with cardiac catheterization procedures in which a small tube, or catheter, is threaded through a patient's artery from a spot on the patient's groin to the heart. The procedure can determine whether a blockage exists in the blood vessels that supply the heart muscle. The procedure also can help to diagnose other problems. Part of the procedure may involve balloon angioplasty, which can be used to treat blockages of blood vessels or heart valves without the need for heart surgery. Cardiology technologists assist physicians as they insert a catheter with a balloon on the end to the point of the obstruction. Another procedure using the catheter is the electrophysiology test, which helps locate the specific areas of heart tissue that give rise to the abnormal electrical impulses that cause arrhythmias.

Technologists prepare patients for cardiac catheterization by first positioning them on an examining table and then shaving, cleaning, and administering anesthesia to the top of their leg near the groin. During the catheterization procedures, they monitor patients' blood pressure and heart rate with electrocardiogram (ECG) equipment and notify the physician if something appears to be wrong. Technologists also may prepare and monitor patients during open-heart surgery and during the insertion of pacemakers and stents that open up blockages in arteries to the heart and major blood vessels.

Noninvasive Technology

Technologists who specialize in vascular technology or echocardiography perform noninvasive tests. Tests are called noninvasive if they do not require the insertion of probes or other instruments into the patient's body. For example, procedures such as Doppler ultrasound transmit high-frequency sound waves into areas of the patient's body and then process reflected echoes of the sound waves to form an image. Technologists view the ultrasound image on a screen and may record the image on videotape or photograph it for interpretation and diagnosis by a physician. As the technologist uses the instrument to perform scans and record images, technologists check the image on the screen for subtle differences between healthy and diseased areas, decide which images to include in the report to the physician, and judge whether the images are satisfactory for diagnostic purposes. They also explain the

procedure to patients, record any additional medical history the patient relates, select appropriate equipment settings, and change the patient's position as necessary.

Vascular Technology

Technologists who assist physicians in the diagnosis of disorders affecting the circulation are known as **vascular technologists** or vascular sonographers. Vascular technologists complete patients' medical history, evaluate pulses and assess blood flow in arteries and veins by listening to vascular flow sounds for abnormalities, and confirm that the appropriate vascular test has been ordered. Once confirmed, they perform a **noninvasive procedure** using ultrasound instruments to record vascular information such as vascular blood flow, blood pressure, oxygen saturation, cerebral circulation, peripheral circulation, abdominal circulation, and the presence of blood clots in the body. Many of these tests are performed during or immediately after surgery. Vascular technologists then provide a summary of findings to the physician to aid in patient diagnosis and management.

Electrocardiography and Echocardiography

This area of practice includes taking **electrocardiograms (ECGs)** and sonograms of the heart. Cardiovascular technicians who specialize in ECGs and **stress testing**, and perform Holter monitor procedures are known as cardiographic or **electrocardiograph technicians**.

A basic ECG, which traces electrical impulses transmitted by the heart, requires technicians to attach electrodes to the patient's chest, arms, and legs, and then manipulate switches on an ECG machine to obtain a reading. An ECG is printed out for interpretation by the physician. This test is done before most kinds of surgery, or as part of a routine physical examination, especially on persons who have reached middle age or who have a history of cardiovascular problems.

Electrocardiograph technicians with advanced training perform Holter monitor and stress testing. For **Holter monitoring**, technicians place electrodes on the patient's chest and attach a portable ECG monitor to the patient's belt. Following 24 or more hours of normal activity by the patient, the technician removes a tape from the monitor and places it in a scanner. After checking the quality of the recorded impulses on an electronic screen, the technician usually prints the information from the tape for analysis by a physician. Physicians use the output from the scanner to diagnose heart ailments, such as heart rhythm abnormalities or problems with pacemakers. An example of a Holter monitor is seen in FIGURE 27.4.

For a treadmill stress test, ECG technicians document the patient's medical history, explain the procedure, connect the patient to an ECG 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 increased exertion. Like vascular technologists and cardiac sonographers, cardiographic technicians who perform ECG, Holter monitor, and stress tests are known as "noninvasive" technicians.

FIGURE 27.4 Holter monitor.
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Technologists who use ultrasound to examine the heart chambers, valves, and vessels are referred to as cardiac sonographers, or **echocardiographers**. They use ultrasound instrumentation to create images called echocardiograms. An echocardiogram may be performed while the patient is either resting or physically active. Technologists may administer medication to physically active patients to assess their heart function. Cardiac sonographers also may assist physicians who perform **transesophageal echocardiography,** which involves placing a tube in the patient's esophagus to obtain ultrasound images.

Work Environment

Cardiovascular technologists and technicians spend a lot of time walking and standing. Heavy lifting may be involved to move equipment or transfer patients. These workers wear heavy protective aprons while conducting some procedures. Those who work in catheterization laboratories may face stressful working conditions because they are in close contact with patients with serious heart ailments. For example, some patients may encounter complications that have life-or-death implications.

Some cardiovascular technologists and technicians may have the potential for radiation exposure, which is kept to a minimum by strict adherence to radiation safety guidelines. In addition, those who use sonography can be at an increased risk for musculoskeletal disorders such as carpel tunnel syndrome, neck and back strain, and eyestrain. The greater use of ergonomically correct equipment and an increased awareness of hazards will continue to minimize such risks.

Technologists and technicians generally work a five-day, 40-hour week that may include weekends. Those in catheterization laboratories tend to work longer hours and may work evenings. They also may be on call during the night and on weekends.

Employment Opportunities

Cardiovascular technologists and technicians held about 52,000 jobs in 2014. About 77% of jobs were in public and private hospitals, primarily in cardiology departments. The remaining jobs were mostly in offices of physicians, including cardiologists, or in medical and diagnostic laboratories, including diagnostic imaging centers.

Educational and Legal Requirements

An associate's degree is the most common level of education completed by cardiovascular technologists and technicians. Certification, although not required in all cases, is available.

Education and Training

Although a few cardiovascular technologists, vascular technologists, and cardiac sonographers are currently trained on the job, most receive training in two- to four-year programs. The majority of technologists complete a two-year junior or community college program, but four-year programs are increasingly available. The first year is dedicated to core courses and is followed by a year of specialized instruction in either invasive or noninvasive cardiovascular, or noninvasive vascular technology. Those who are already qualified in an allied health profession need to complete only the year of specialized instruction.

The Joint Review Committee on Education in Cardiovascular Technology reviews education programs seeking accreditation. The Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredits these education programs; as of September 2015, there were 58 accredited programs in cardiovascular technology in the United States.[3] Similarly, students who want to study echocardiography or vascular sonography may also attend CAAHEP-accredited programs in diagnostic medical sonography. In 2015, there were 207 diagnostic medical sonography programs accredited by CAAHEP. Those who attend these accredited programs are eligible to obtain professional certification.

Unlike most other cardiovascular technologists and technicians, most ECG technicians are trained on the job by an ECG supervisor or a cardiologist. On-the-job training usually lasts about four to six weeks. Most employers prefer to train people already in the healthcare field—nursing aides, for example. Some ECG technicians are students enrolled in two-year programs to become technologists, working part time to gain experience and make contact with employers. For technicians who perform Holter monitoring, on-the-job training may last around 18 to 24 months.

Licensure and Certification

Some states require workers in this occupation to be licensed. For information on a particular state, contact that state's medical board. Certification is available from two organizations: Cardiovascular Credentialing International (CCI) and the American Registry for Diagnostic Medical Sonographers (ARDMS). The CCI offers four certifications—Certified Cardiographic Technician (CCT), Registered Cardiac Sonographer (RCS), Registered Vascular Specialist (RVS), and Registered Cardiovascular Invasive Specialist (RCIS). The ARDMS offers Registered Diagnostic Cardiac Sonographer (RDCS) and Registered Vascular Technologist (RVT) credentials. Some states require certification as part of licensure. In other states, certification is not required, but many employers prefer it.

Other Qualifications

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. They must be articulate and well-spoken, as they must communicate in technical detail with physicians and also explain procedures in a simple manner to patients.

Advancement

Technologists and technicians can advance to higher levels of the profession as many institutions structure the occupation in multiple levels, each having an increasing amount of responsibility. Technologists and technicians also can advance into supervisory or management positions. Other common possibilities include working in an educational setting or conducting laboratory work.

Employment Trends

Employment is expected to grow much faster than average; technologists and technicians with multiple professional credentials, trained to perform a wide range of procedures, will have the best prospects.

Employment Change

Employment of cardiovascular technologists and technicians is expected to increase by 22% through the year 2022, much faster than the average for all occupations. Growth will occur as the population ages, because older people have a higher incidence of heart disease and other complications of the heart and vascular system. Noninvasive procedures, such as ultrasound, are being performed more often as an alternative to more

expensive and invasive procedures. Due to advances in medicine and greater public awareness, signs of vascular disease can be detected earlier, creating demand for cardiovascular technologists and technicians to perform various procedures.

Employment of vascular technologists and echocardiographers will grow as advances in vascular technology and sonography reduce the need for more costly and invasive procedures. Electrophysiology is also becoming a rapidly growing specialty. However, fewer ECG technicians will be needed, as hospitals train nursing aides and others to perform basic ECG 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 ECG.

Medicaid has relaxed some of the rules governing reimbursement for vascular exams, which is resulting in vascular studies becoming a more routine practice. As a result of the increased use of these procedures, individuals with training in vascular studies should have more favorable employment opportunities.

Job Prospects

Some additional job openings for cardiovascular technologists and technicians will arise from replacement needs as individuals transfer to other jobs or leave the labor force. Job prospects will be best for those with multiple professional credentials, trained to perform a wide range of procedures. Those willing to relocate or work irregular hours also will have better job opportunities.

It is not uncommon for cardiovascular technologists and technicians to move between the specialties within the occupation by obtaining certification in more than one specialty. TABLE 27.2 shows some projection data provided by the U.S. Department of Labor.

Median annual earnings of cardiovascular technologists and technicians were $54,330 in May 2014. The middle 50% earned between $37.620 and $70,530. The lowest 10% earned less than $28,110, and the highest 10% earned more than $84,940. Median annual earnings of cardiovascular technologists and technicians in 2014 were $59,570 in offices of physicians and $54,230 in general medical and surgical hospitals.

Related Occupations

Cardiovascular technologists and technicians operate sophisticated equipment that helps physicians and other health practitioners to diagnose and treat patients. Other occupations include diagnostic medical sonographers, nuclear medicine technologists, radiation therapists, radiologic technologists and technicians, and respiratory therapists.

Additional Information

For general information about a career in cardiovascular technology, contact:

- Alliance of Cardiovascular Professionals, P.O. Box 2007, Midlothian, VA 23113. Internet: http://www.acponline.org

For a list of accredited programs in cardiovascular technology, contact:

- Committee on Accreditation for Allied Health Education Programs, 1361 Park St., Clearwater, FL 33756. Internet: http://www.caahep.org
- Society for Vascular Ultrasound, 4601 Presidents Dr., Suite 260, Lanham, MD 20706-4381. Internet: http://www.svunet.org

For information regarding registration and certification, contact:

- Cardiovascular Credentialing International, 1500 Sunday Dr., Suite 102, Raleigh, NC 27607. Internet: http://www.cci-online.org
- American Registry of Diagnostic Medical Sonographers, 51 Monroe St., Plaza East One, Rockville, MD 20850-2400. Internet: http://www.ardms.org

NUCLEAR MEDICINE TECHNOLOGISTS

Significant Points

- Job opportunities should be favorable.
- Technologists with training in multiple diagnostic methods, or in nuclear cardiology, should have the best prospects.
- Nuclear medicine technology programs range in length from one to four years and lead to a certificate, an associate's degree, or a bachelor's degree.
- About 69% of nuclear medicine technologists work in hospitals.

TABLE 27.2 Projections Data for Cardiovascular Technologists and Technicians, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Cardiovascular technologists and technicians	52,000	63,500	11,500	22%

Work Description

Diagnostic imaging embraces several procedures that aid in diagnosing ailments, the most familiar being the X-ray. In **nuclear medicine**, **radionuclides**—unstable atoms that emit radiation spontaneously—are used to diagnose and treat disease. Radionuclides are purified and compounded to form **radiopharmaceuticals**. Nuclear medicine technologists administer radiopharmaceuticals to patients and then monitor the characteristics and functions of tissues or organs in which the drugs localize. Abnormal areas show higher-than-expected or lower-than-expected concentrations of radioactivity. An example of a radiopharmaceutical used for imaging plaques associated with Alzheimer's disease is seen in FIGURE 27.5. Nuclear medicine differs from other diagnostic imaging technologies because it determines the presence of disease on the basis of metabolic changes rather than changes in organ structure.

Nuclear medicine technologists operate cameras that detect and map the radioactive drug in a patient's body to create diagnostic images. After explaining test procedures to patients, technologists prepare a dose of the radiopharmaceutical and administer it by mouth, injection, inhalation, or other means. They position patients and start a **gamma scintillation camera**, or "scanner," which creates images of the distribution of a radiopharmaceutical as it localizes in, and emits signals from, the patient's body. The images are produced on a computer screen or on film for a physician to interpret.

When preparing radiopharmaceuticals, technologists adhere to safety standards that keep the radiation exposure as low as possible to workers and patients. Technologists maintain patient records and document the amount and type of radionuclides that they receive, use, and discard.

Work Environment

Physical stamina is important because nuclear medicine technologists are on their feet much of the day and may have to lift or turn disabled patients. In addition, technologists must operate complicated equipment that requires mechanical ability and manual dexterity.

Although the potential for radiation exposure exists in this field, it is minimized by the use of shielded syringes, gloves, and other protective devices, and by adherence to strict radiation safety guidelines. The amount of radiation in a nuclear medicine procedure is comparable to that received during a diagnostic X-ray procedure. Technologists also wear badges that measure radiation levels. Because of safety programs, badge measurements rarely exceed established safety levels.

Nuclear medicine technologists generally work a 40-hour week, perhaps including evening or weekend hours, in departments that operate on an extended schedule. Opportunities for part-time and shift work also are available. In addition, technologists in hospitals may have on-call duty on a rotational basis, and those employed by mobile imaging services may be required to travel to several locations.

There are two areas of specialty for nuclear medicine technologists—**nuclear cardiology (NCT)** and **positron emission tomography (PET)**. Nuclear cardiology typically involves myocardial perfusion imaging, which, like most nuclear medicine, uses radiopharmaceuticals and cameras to image the body. Myocardial perfusion imaging, however, requires that patients perform exercise so the technologist can image the heart and blood flow. Technologists specializing in PET operate a special medical imaging device that produces a 3-D image of the body.

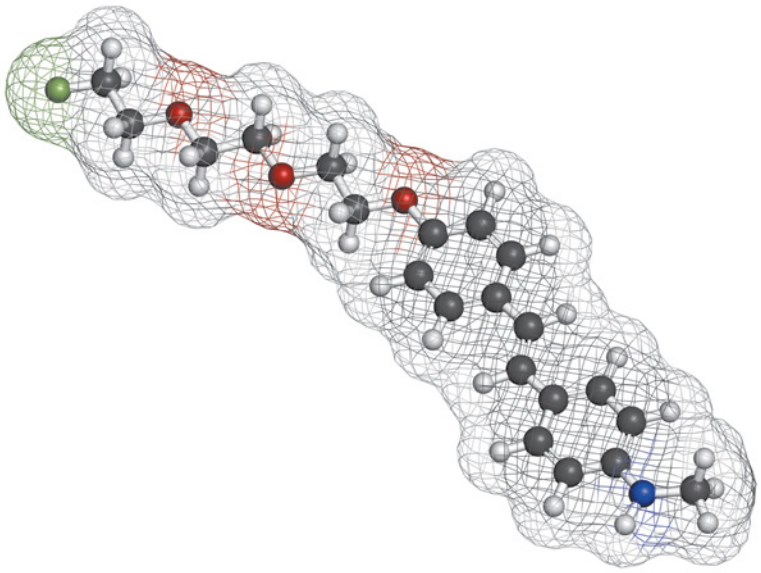

FIGURE 27.5 Radiopharmaceutical associated with diagnosing Alzheimer's disease.
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Employment Opportunities

Nuclear medicine technologists held about 20,700 jobs in 2014. About 69% of all nuclear medicine technologist jobs were in hospitals—private and public. Most of the rest were in offices of physicians or in medical and diagnostic laboratories, including diagnostic imaging centers.

Educational and Legal Requirements

Nuclear medicine technology programs range in length from one to four years and lead to a certificate, an associate's degree, or a bachelor's degree. Many employers and an increasing number of states require certification or licensure. Aspiring nuclear medicine technologists should check the requirements of the state in which they plan to work.

Education and Training

Completion of a nuclear medicine technology program takes one to four years and leads to a certificate, an associate's degree, or a bachelor's degree. Generally, certificate programs are offered in hospitals, associate's degree programs in community colleges, and bachelor's degree programs in four-year colleges and universities. Courses cover the physical sciences, the biological effects of radiation exposure, radiation protection and procedures, the use of radiopharmaceuticals, imaging techniques, and computer applications.

One-year certificate programs are for health professionals who already possess an associate's degree—especially radiologic technologists and diagnostic medical sonographers—but who wish to specialize in nuclear medicine. The programs also attract medical technologists, registered nurses, and others who wish to change fields or specialize.

The Joint Review Committee on Education Programs in Nuclear Medicine Technology accredits most formal training programs in nuclear medicine technology. In 2015, there were more than 100 accredited programs available.[4]

Licensure and Certification

Educational requirements for nuclear medicine technologists vary from state to state, so it is important that aspiring technologists check the requirements of the state in which they plan to work. In 2015, 40 states licensed nuclear medicine technologists. In addition, many third-party payers require nuclear medicine technologists to be certified in order for the healthcare facility to receive reimbursement for imaging procedures. Certification is available from the American Registry of Radiologic Technologists (ARRT) and from the Nuclear Medicine Technology Certification Board (NMTCB). Although not required, some workers receive certification from both agencies. Nuclear medicine technologists must meet the minimum federal standards on the administration of radioactive drugs and the operation of radiation detection equipment.

The most common way to become eligible for certification by ARRT or NMTCB is to complete a training program recognized by those organizations. Other ways to become eligible are completing a bachelor's or associate's degree in biological science or a related health field, such as registered nursing, or acquiring, under supervision, a certain number of hours of experience in nuclear medicine technology. ARRT and NMTCB have different requirements, but in all cases, one must pass a comprehensive exam to become certified.

In addition to the general certification requirements, certified technicians also must complete a certain number of continuing education hours. Continuing education is required primarily because of the frequent technological and innovative changes in the field of nuclear medicine. Typically, technologists must register annually with both the ARRT and the NMTCB.

Other Qualifications

Nuclear medicine technologists should have excellent communication skills, be detail oriented, and have a desire to continue learning. Technologists must effectively interact with patients and their families and should be sensitive to patients' physical and psychological needs. Nuclear medicine technologists must be able to work independently as they usually have little direct supervision. Technologists also must be detailed oriented and meticulous when performing procedures to ensure that all regulations are being followed.

Advancement

Technologists may advance to supervisor, then to chief technologist, and to department administrator or director. Some technologists specialize in a clinical area, such as nuclear cardiology or computer analysis, or leave patient care to take positions in research laboratories. Some become instructors in, or directors of, nuclear medicine technology programs, a step that usually requires a bachelor's or master's degree in the subject. Others leave the occupation to work as sales or training representatives for medical equipment and radiopharmaceutical manufacturing firms or as radiation safety officers in regulatory agencies or hospitals.

Employment Trends

Slower-than-average job growth will arise from an increase in the number of middle-aged and elderly persons, who are the primary users of diagnostic and treatment procedures. The number of job openings each year will be relatively low because the occupation is small.

Employment Change

Employment of nuclear medicine technologists is expected to increase by 2% from 2014 to 2024, slower than the average for all occupations. Growth will arise from technological advancement, the development of new nuclear medicine treatments, and an increase in the number of middle-aged and older persons, who are the primary users of diagnostic procedures, including nuclear medicine tests.

Technological innovations may increase the diagnostic uses of nuclear medicine. New nuclear medical imaging technologies, including positron emission tomography (PET) and single photon emission computed tomography (SPECT), are expected to be used increasingly and to contribute further to employment growth. The wider use of nuclear medical imaging to observe metabolic and biochemical changes during neurology, cardiology, and oncology procedures also will spur demand for nuclear medicine technologists.

Nonetheless, cost considerations will affect the speed with which new applications of nuclear medicine grow. Some promising nuclear medicine procedures, such as positron emission tomography, are extremely costly, and hospitals contemplating these procedures will have to consider equipment costs, reimbursement policies, and the number of potential users.

Job Prospects

In spite of fast growth in nuclear medicine, the number of openings in the occupation each year will be relatively low because of the small size of the occupation. Technologists who have additional training in other diagnostic methods, such as radiologic technology or diagnostic medical sonography, will enjoy the best prospects. TABLE 27.3 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual earnings of nuclear medicine technologists were $72,100 in May 2014. The middle 50% earned between $61,730 and $85,410. The lowest 10% earned less than $52,080, and the highest 10% earned more than $96,570. Median annual earnings of nuclear medicine technologists in 2014 were $72,980 in general medical and surgical hospitals.

Related Occupations

Nuclear medicine technologists operate sophisticated equipment to help physicians and other health practitioners diagnose and treat patients. Cardiovascular technologists and technicians, clinical laboratory technologists and technicians, diagnostic medical sonographers, radiation therapists, radiologic technologists and technicians, and respiratory therapists perform similar functions.

Additional Information

Additional information on a career as a nuclear medicine technologist is available from:

- Society of Nuclear Medicine and Molecular Imaging, 1850 Samuel Morse Dr., Reston, VA 20190. Internet: http://www.snmmi.org

For a list of accredited programs in nuclear medicine technology, contact:

- Joint Review Committee on Educational Programs in Nuclear Medicine Technology, 2000 W. Danforth Rd., Suite 130 #203, Edmond, OK 73003. Internet: http://www.jrcnmt.org

Information on certification is available from:

- Nuclear Medicine Technology Certification Board, 3558 Habersham at Northlake, Building 1, Tucker, GA 30084. Internet: http://www.nmtcb.org
- American Registry of Radiologic Technologists, 1255 Northland Dr., St. Paul, MN 55120-1155. Internet: http://www.arrt.org

SURGICAL TECHNOLOGISTS

Significant Points

- Employment is expected to grow much faster than average.
- Job opportunities will be best for technologists who are certified and for those who are willing to relocate.
- Training programs last 9 to 24 months and lead to a certificate, diploma, or associate's degree.
- Hospitals will continue to be the primary employers, although much faster employment growth is expected in other healthcare industries.

TABLE 27.3 Projections for Nuclear Medicine Technologists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Nuclear medicine technologists	20,700	21,000	300	2%

Work Descriptions

Surgical technologists, also called scrubs and surgical or operating room technicians, assist in surgical operations under the supervision of surgeons, registered nurses, or other surgical personnel. Surgical technologists are members of operating room teams, which most commonly include surgeons, anesthesiologists, and circulating nurses.

Before an operation, surgical technologists help prepare the operating room by setting up surgical instruments and equipment, sterile drapes, and sterile solutions. They assemble both sterile and nonsterile equipment, as well as check and adjust it to ensure that it is working properly. Technologists also get patients ready for surgery by washing, shaving, and disinfecting incision sites. They transport patients to the operating room, help position them on the operating table, and cover them with sterile surgical drapes. Technologists also observe patients' vital signs, check charts, and help the surgical team put on sterile gowns and gloves.

During surgery, technologists pass instruments and other sterile supplies to surgeons and surgeon assistants. They may hold retractors, cut sutures, and help count sponges, needles, supplies, and instruments. Surgical technologists help prepare, care for, and dispose of specimens taken for laboratory analysis, and help apply dressings. Some operate sterilizers, lights, or suction machines, and help operate diagnostic equipment.

After an operation, surgical technologists may help transfer patients to the recovery room and clean and restock the operating room. Certified surgical technologists with additional specialized education or training also may act as the surgical first assistant or circulator. The surgical first assistant, as defined by the American College of Surgeons (ACS), provides aid in exposure, hemostasis (controlling blood flow and stopping or preventing hemorrhage), and other technical functions under the surgeon's direction, to assist the surgeon in carrying out a safe operation. A circulating technologist is the "unsterile" member of the surgical team. The circulator interviews and prepares the patient prior to surgery, assists with anesthesia, obtains and opens packages from which the "sterile" team members remove sterile contents during the procedure, keeps a written account of the surgical procedure, and answers the surgeon's questions about the patient during the surgery.

Work Environment

Surgical technologists work in clean, well-lit, cool environments. They must stand for long periods and remain alert during operations. At times, they may be exposed to communicable diseases and unpleasant sights, odors, and materials. They must wear special sterile clothing called scrubs while they are in the operating room. Most surgical technologists work a regular 40-hour week, although they may be on call or work nights, weekends, and holidays on a rotating basis.

Employment Opportunities

Surgical technologists held about 99,800 jobs in 2014. About 70% of jobs for surgical technologists were in hospitals, mainly in operating and delivery rooms. Other jobs were in offices of physicians or dentists who perform outpatient surgery and in outpatient care centers, including ambulatory surgical centers. A few technologists, known as private scrubs, are employed directly by surgeons who maintain specialized surgical teams, such as those for liver transplants.

Educational and Legal Requirements

Training programs last 9 to 24 months and lead to a certificate, diploma, or associate's degree. Professional certification can help in getting jobs and promotions.

Education and Training

Surgical technologists receive their training in formal programs offered by community and junior colleges, vocational schools, universities, hospitals, and the military. In 2015, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) recognized 449 accredited training programs.[5] Programs last from 9 to 24 months and lead to a certificate, diploma, or associate's degree. High school graduation normally is required for admission. Recommended high school courses include health, biology, chemistry, and mathematics.

Surgical technologist training programs provide classroom education and supervised clinical experience. Students take courses in anatomy, physiology, microbiology, pharmacology, professional ethics, and medical terminology. Other topics covered include the care and safety of patients during surgery, sterile techniques, and surgical procedures. Students also learn to sterilize instruments, prevent and control infection, and handle special drugs, solutions, supplies, and equipment.

Certification and Other Qualifications

Most employers prefer to hire certified surgical technologists. Technologists may obtain voluntary professional certification from the National Board of Surgical Technology and Surgical Assisting by graduating from a CAAHEP-accredited program and passing a national certification examination.[6] They may then use the Certified Surgical Technologist (CST) designation. Continuing education or reexamination is required to maintain certification, which must be renewed every four years.

Certification also may be obtained from the National Center for Competency Testing (NCCT).[7] Candidates qualify for the exam by following one of three paths: (1) they complete an accredited training program; (2) undergo a two-year hospital on-the-job training program; or (3) acquire

TABLE 27.4 Projections Data for Surgical Technologists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Surgical technologists	99,800	114,500	14,700	15%

three years of experience working in the field. After passing the exam, individuals may use the designation Tech in Surgery-Certified, (TS-C). This certification must be renewed every five years through either continuing education or reexamination.

Surgical first assistants can obtain certification from three organizations: the Certified First Surgical Assistant (CFSA) designation from the National Board of Surgical Technology and Surgical Assisting; the Surgical Assistant Certified (SA-C) designation from the American Board of Surgical Assistants; or the Certified Surgical Assistant (CSA) designation from the National Surgical Assistants Association.[8]

Surgical technologists need manual dexterity sufficient to handle instruments quickly. They also must be conscientious, orderly, and emotionally stable to handle the demands of the operating room environment. Technologists must respond quickly and be familiar enough with operating room procedures to have instruments on hand for surgeons as needed. They are expected to keep abreast of new developments in the field.

Advancement

Technologists advance by specializing in a particular area of surgery, such as neurosurgery or open-heart surgery. They also may work as circulating technologists. With additional training, some technologists advance to surgical first assistant. 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. Job opportunities will be best for technologists who are certified and for those who are willing to relocate.

Employment Change

Employment of surgical technologists is expected to grow 15% between 2014 and 2024, much faster than the average for all occupations, as the volume of surgeries increases. The number of surgical procedures is expected to rise as the population grows and ages. Older people, including the baby-boom generation, who generally require more surgical procedures, will account for a larger portion of the general population. In addition, technological advances, such as fiber optics and laser technology, will permit an increasing number of new surgical procedures to be performed and also will allow surgical technologists to assist with a greater number of procedures.

Hospitals will continue to be the primary employer of surgical technologists, although much faster employment growth is expected in offices of physicians and in outpatient care centers, including ambulatory surgical centers.

Job Prospects

Job opportunities will be best for technologists who are certified. TABLE 27.4 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual earnings of wage and salary surgical technologists were $43,350 in May 2014. The middle 50% earned between $35,580 and $52,890. The lowest 10% earned less than $30,780, and the highest 10% earned more than $62,170. Median annual earnings in the industries employing the largest numbers of surgical technologists are shown in TABLE 27.5.

Wages of surgical technologists vary with their experience and education, the responsibilities of the position, the working hours, and the economy of a given region of the country. Benefits provided by most employers include paid vacation and sick leave; health, medical, vision, dental, and life insurance; and retirement programs. A few employers also provide tuition reimbursement and child-care benefits.

TABLE 27.5 Median Annual Earnings in Industries Employing Surgical Technologists, May 2014

Specialty (except psychiatric and substance) hospitals	$47,840
Outpatient care centers	$46,090
General medical and surgical hospitals	$44,620
Offices of physicians	$45,730
Offices of dentists	$42,920

Related Occupations

Other health occupations requiring approximately one year of training after high school include dental assistants, licensed practical and licensed vocational nurses, clinical laboratory technologists and technicians, and medical assistants.

Additional Information

For additional information on a career as a surgical technologist and a list of CAAHEP-accredited programs, contact:

- Association of Surgical Technologists, 6 West Dry Creek Cir., Suite 200, Littleton, CO 80120. Internet: http://www.ast.org

For information on becoming a certified surgical technologist, contact:

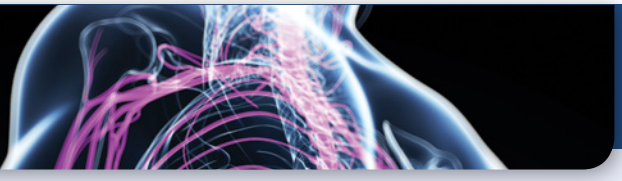
- National Board of Surgical Technologists and Surgical Assistants, 6 West Dry Creek Cir., Suite 100, Littleton, CO 80120. Internet: http://www.nbstsa.org

For information on becoming a Tech in Surgery-Certified, contact:

- National Center for Competency Testing, 7007 College Blvd., Suite 705, Overland Park, KS 66211. Internet: http://www.ncctinc.com

For information on becoming certified as a surgical assistant, contact:

- National Board of Surgical Technologists and Surgical Assistants, 6 West Dry Creek Cir., Suite 100, Littleton, CO 80120. Internet: http://www.nbstsa.org
- American Board of Surgical Assistants, 4951 Hidden Lakes Dr., Harshaw, WI 54529. Internet: http://www.absa.net
- National Surgical Assistant Association, 1425 K Street NW, Washington DC 20005. Internet: http://www.nsaa.net



LEARNING PORTFOLIO

Issues for Discussion

1. Review the requirements for becoming a diagnostic medical sonographer, a cardiovascular technologist, a nuclear medicine technologist, and a surgical technologist. Compare the requirements for preparing for these four careers in terms of length of training, cost of training, job opportunities, and lifetime income. Which of these careers best matches your career goals?
2. Diagnostic medical sonographers and cardiovascular technologists each have opportunities to specialize in certain areas of their respective fields. Discuss these specializations and identify which one is of most interest to you.

Enrichment Activities

1. View the career video on the webpage of the Society of Diagnostic Medical Sonography. (Internet: http://www.sdms.org/career/video/default.asp). Discuss your impressions.
2. View the career video on the webpage of the Society for Vascular Ultrasound (Internet: http://www.svunet.org/about/careerinformation). Discuss your impressions.

References

1. Commission on Accreditation of Allied Health Education Programs. *Diagnostic Medical Sonography Accredited Programs*. Internet: http://www.caahep.org/Find-An-Accredited-Program/
2. American Registry of Diagnostic Medical Sonographers. *Registered Diagnostic Medical Sonographer*. Internet: http://www.ardms.org/get-certified/RDMS/Pages/default.aspx
3. Commission on Accreditation of Allied Health Education Programs. *Cardiovascular Technology Accredited Programs*. Internet: http://www.caahep.org/Find-An-Accredited-Program/
4. Joint Review Committee on Education Programs in Nuclear Medicine Technology. *Accredited Programs*. Internet: http://jrcnmt.org/find-a-program/
5. Commission on Accreditation of Allied Health Education Programs. *Surgical Technology*. Internet: http://www.caahep.org/Find-An-Accredited-Program/
6. National Board of Surgical Technology and Surgical Assisting, *CST Examinations*. Internet: http://www.nbstsa.org/examinations-cst.html
7. National Center for Competency Testing. *Tech-In-Surgery*. Internet: https://www.ncctinc.com/Certifications/TSC.aspx
8. National Board of Surgical Technology and Surgical Assisting. *CSFA Examinations*. Internet: http://www.nbstsa.org/examinations-csfa.html

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CHAPTER 28

Respiratory Care Practitioners*

Key Terms

Aerosol
Arterial blood sample
Blood pH
Cardiopulmonary disorders
Certified respiratory therapist
Chest physiotherapy
Committee on Accreditation for Respiratory Care (Co-ARC)
Lung capacity
Oxygen or oxygen mixtures
Polysomnography
Registered respiratory therapist (RRT)
Respiratory therapy technicians
Ventilators

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

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 that are crucial in maintaining the lives of seriously ill patients with breathing problems and assist in the treatment of patients with cardiopulmonary (heart and lung) diseases and disorders.

RESPIRATORY THERAPISTS

Significant Points

- Job opportunities should be very good.
- Hospitals will account for the vast majority of job openings, but a growing number of openings will arise in other settings.
- An associate's degree is the minimum educational requirement, but a bachelor's or master's degree may be important for advancement.
- All states except Alaska and Hawaii require respiratory therapists to be licensed.

Work Description

Respiratory therapists—also known as respiratory care practitioners—evaluate, treat, and care for patients with breathing or other **cardiopulmonary disorders**. Practicing under the direction of a physician, respiratory therapists assume primary responsibility for all respiratory care therapeutic treatments and diagnostic procedures, including the supervision of respiratory therapy technicians. They consult with physicians and other healthcare staff to help develop and modify patient care plans. Therapists also provide complex therapy requiring considerable independent judgment, such as caring for patients on life support in intensive-care units of hospitals.

Respiratory therapists evaluate and treat all types of patients, ranging from premature infants whose lungs are not fully developed to older adults whose lungs are diseased. They provide temporary relief to patients with chronic asthma or emphysema and give emergency care to patients who are victims of a heart attack, stroke, drowning, or shock.

Respiratory therapists interview patients, perform limited physical examinations, and conduct diagnostic tests. For example, respiratory therapists test patients' breathing capacity and determine the concentration of oxygen and other gases in their blood. They also measure a patient's pH, which indicates the acidity or alkalinity of the blood. To evaluate a patient's **lung capacity**, respiratory therapists have the patient breathe into an instrument that measures the volume and flow of oxygen during inhalation and exhalation. An example of how a patient inhales and exhales is seen in FIGURE 28.1. By comparing the reading

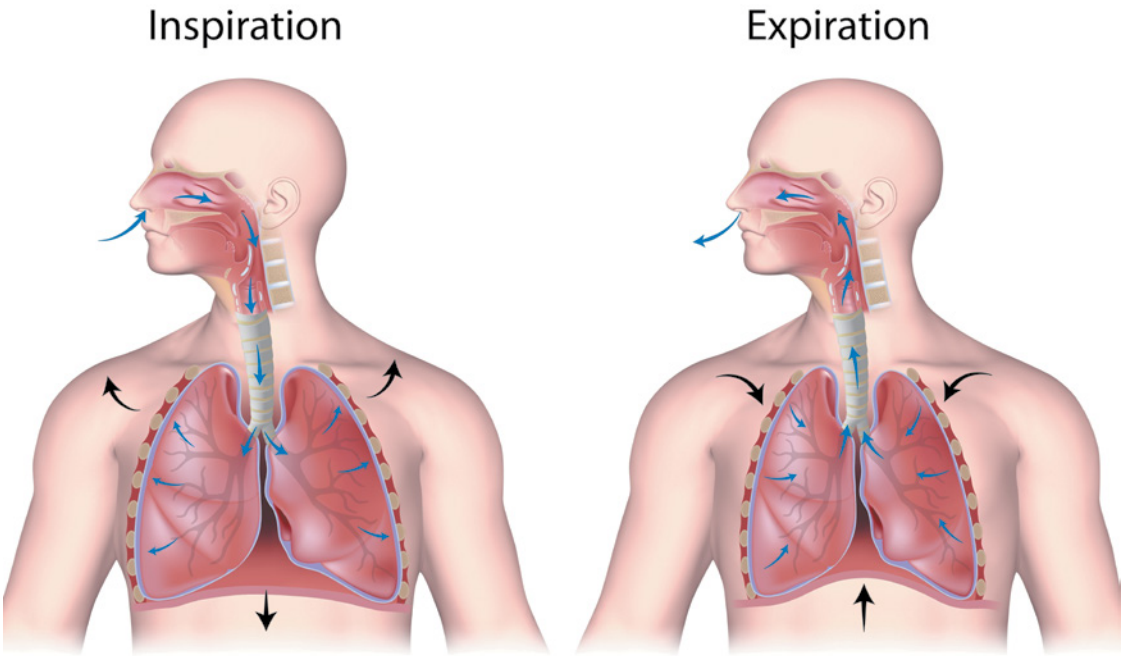

FIGURE 28.1 Example of patient breathing.

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with the norm for the patient's age, height, weight, and sex, respiratory therapists can provide information that helps determine whether the patient has any lung deficiencies. To analyze oxygen, carbon dioxide, and **blood pH** levels, therapists draw an **arterial blood sample**, place it in a blood gas analyzer, and relay the results to a physician, who then makes treatment decisions.

To treat patients, respiratory therapists use **oxygen or oxygen mixtures**, **chest physiotherapy**, and **aerosol** medications—liquid medications suspended in a gas that forms a mist that is inhaled. They teach patients how to inhale the aerosol properly to ensure its effectiveness. When a patient has difficulty getting enough oxygen into his or her blood, therapists increase the patient's concentration of oxygen by placing an oxygen mask or nasal cannula on the patient and setting the oxygen flow at the level prescribed by a physician. Therapists also connect patients who cannot breathe on their own to **ventilators** that deliver pressurized oxygen into the lungs. The therapists insert a tube into the patient's trachea, or windpipe; connect the tube to the ventilator; and set the rate, volume, and oxygen concentration of the oxygen mixture entering the patient's lungs. An demonstration of a respiratory therapist inserting a tube into a patient mannequin is seen in FIGURE 28.2.

Therapists perform regular assessments of patients and equipment. If a patient appears to be having difficulty breathing, or if the oxygen, carbon dioxide, or pH level of the blood is abnormal, therapists change the ventilator setting according to the doctor's orders or check the equipment for mechanical problems.

Respiratory therapists perform chest physiotherapy on patients to remove mucus from their lungs and make it easier for them to breathe. Therapists place patients in positions that help drain mucus, and then vibrate the patients' rib cages, often by tapping on the chest, and tell the patients to cough. Chest physiotherapy may be needed after surgery, for example, because anesthesia depresses respiration. As a result, physiotherapy may be prescribed to help get the patient's lungs back to normal and to prevent congestion. Chest physiotherapy also helps patients suffering from lung diseases, such as cystic fibrosis, that cause mucus to collect in the lungs.

Therapists who work in home care teach patients and their families to use ventilators and other life-support systems. In addition, these therapists visit patients in their homes to inspect and clean equipment, evaluate the home environment, and ensure that patients have sufficient knowledge of their diseases and the proper use of their medications and equipment. Therapists also make emergency visits if equipment problems arise.

In some hospitals, therapists perform tasks that fall outside their traditional role. Therapists are becoming involved in areas such as pulmonary rehabilitation, smoking-cessation counseling, disease prevention, case management, and **polysomnography**—the diagnosis of breathing disorders during sleep, such as apnea. Respiratory therapists also increasingly treat critical-care patients, either as part of surface and air transport teams or as part of rapid-response teams in hospitals.

FIGURE 28.2 Insertion of breathing tube.

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Work Environment

Respiratory therapists generally work between 35 and 40 hours a week. Because hospitals operate around the clock, therapists can work evenings, nights, or weekends. They spend long periods standing and walking between patients' rooms. In an emergency, therapists work under the stress of the situation. Respiratory therapists employed in home health care must travel frequently to patients' homes.

Respiratory therapists are trained to work with gases stored under pressure. Adherence to safety precautions and the regular maintenance and testing of equipment minimize the risk of injury. As in many other health occupations, respiratory therapists are exposed to infectious diseases, but by carefully following proper procedures, they can minimize these risks.

Employment Opportunities

Respiratory therapists held about 120,700 jobs in 2014. About 81% of jobs were in hospitals, mainly in departments of respiratory care, anesthesiology, or pulmonary medicine. Most of the remaining jobs were in offices of physicians or other health practitioners, consumer-goods rental firms that supply respiratory equipment for home use, nursing care facilities, employment services, and home healthcare services.

Educational and Legal Requirements

An associate's degree is the minimum educational requirement, but a bachelor's or master's degree may be important for advancement. All states except Alaska and Hawaii require respiratory therapists to be licensed.

Education and Training

An associate's degree is required to become a respiratory therapist. Training is offered at the postsecondary level by colleges and universities, medical schools, vocational-technical institutes, and the armed forces. Most programs award associate's or bachelor's degrees and prepare graduates for jobs as advanced respiratory therapists. A limited number of associate's degree programs lead to jobs as entry-level respiratory therapists. According to **Committee on Accreditation for Respiratory Care (Co-ARC)**, 441 respiratory care programs and satellites held Co-ARC accreditation status in 2013.[1] Associate's degrees were offered at 381 of those programs, bachelor's degrees at 57 programs, and masters' degrees at three programs. According to the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 17 perfusion programs[2] and 38 polysomnographic technology programs were accredited in the United States in 2016.[3]

Among the areas of study in respiratory therapy programs are human anatomy and physiology, pathophysiology, chemistry, physics, microbiology, pharmacology, medical terminology, and mathematics. Other courses deal with therapeutic and diagnostic procedures and tests, equipment, patient assessment, cardiopulmonary resuscitation, the application of clinical practice guidelines, patient care outside of hospitals, cardiac and pulmonary rehabilitation, respiratory health promotion and disease prevention, and medical record keeping and reimbursement. An example of the medical terminology with which a respiratory therapist must be familiar when treating asthma patients is seen in FIGURE 28.3.

High school students interested in applying to respiratory therapy programs should take courses in health, biology, mathematics, chemistry, and physics. Respiratory care involves

FIGURE 28.3 Medical terminology used by respiratory therapists.

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basic mathematical problem solving and an understanding of chemical and physical principles. For example, respiratory care workers must be able to compute dosages of medication and calculate gas concentrations.

Licensure and Certification

A license is required to practice as a respiratory therapist, except in Alaska and Hawaii. Also, most employers require respiratory therapists to maintain a cardiopulmonary resuscitation (CPR) certification.

Licensure is usually based, in large part, on meeting the requirements for certification from the National Board for Respiratory Care (NBRC).[4] The board offers the **Certified Respiratory Therapist (CRT)** credential to those who graduate from entry-level or advanced programs accredited by the CAAHEP or the Committee on Accreditation for Respiratory Care (CoARC) and who also pass an exam.

The board also awards the **Registered Respiratory Therapist (RRT)** credential to CRTs who have graduated from advanced programs and pass two separate examinations. Supervisory positions and intensive-care specialties usually require the RRT.

Other Qualifications

Therapists should be sensitive to patients' physical and psychological needs. Respiratory care practitioners must pay attention to detail, follow instructions, and work as part of a team. In addition, operating advanced equipment requires proficiency with computers.

Advancement

Respiratory therapists advance in clinical practice by moving from general care to the care of critically ill patients who have significant problems in other organ systems, such as the heart or kidneys. Respiratory therapists, especially those with a bachelor's or master's degree, also may advance to supervisory or managerial positions in a respiratory therapy department. Respiratory therapists in home health care and equipment rental firms may become branch managers. Some respiratory therapists advance by moving into teaching positions. Others use the knowledge gained as a respiratory therapist to work in another industry, such as developing, marketing, or selling pharmaceuticals and medical devices.

Employment Trends

Much faster than average growth is projected for respiratory therapists. Job opportunities should be very good.

Employment Change

Employment of respiratory therapists is expected to grow by 12% from 2014 to 2024, faster than the average for all occupations. The increasing demand will come from substantial growth in the middle-aged and older adult populations—a development that will heighten the incidence of cardiopulmonary disease. Growth in demand also will result from the expanding role of respiratory therapists in case management, disease prevention, emergency care, and the early detection of pulmonary disorders.

Older Americans suffer most from respiratory ailments and cardiopulmonary diseases, such as pneumonia, chronic bronchitis, emphysema, and heart disease. As the number of older persons increases, the need for respiratory therapists is expected to increase as well. In addition, advances in inhalable medications and in the treatment of lung transplant patients, heart attack and accident victims, and premature infants—many of whom depend on a ventilator during part of their treatment—will increase the demand for the services of respiratory care practitioners.

Job Prospects

Job opportunities are expected to be very good, especially for those with a bachelor's degree and certification, and those with cardiopulmonary care skills or experience working with infants. The vast majority of job openings will continue to be in hospitals. However, a growing number of openings are expected to be outside of hospitals, especially in home healthcare services, offices of physicians or other health practitioners, consumer-goods rental firms, or in the employment services industry as temporary workers in various settings. TABLE 28.1 provides projections data from the National Employment Matrix.

Earnings

Median annual wages of wage and salary respiratory therapists were $56,730 in May 2014. The middle 50% earned between $47,920 and $67,950. The lowest 10% earned less than $41,380, and the highest 10% earned more than $78,230.

TABLE 28.1 Projections Data for Respiratory Therapists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Respiratory therapists	120,700	135,500	14,900	12%

Additional Information

Information concerning a career in respiratory care is available from:

- American Association for Respiratory Care, 9425 N. MacArthur Blvd., Suite 100, Irving, TX 75063. Internet: http://www.aarc.org

For a list of accredited educational programs for respiratory care practitioners, contact either of the following organizations:

- Commission on Accreditation for Allied Health Education Programs, 1361 Park St., Clearwater, FL 33756. Internet: http://www.caahep.org
- Committee on Accreditation for Respiratory Care, 1248 Harwood Rd., Bedford, TX 76021. Internet: http://www.coarc.com

Information on gaining credentials in respiratory care and a list of state licensing agencies can be obtained from:

- National Board for Respiratory Care, Inc., 18000 W. 105th St., Olathe, KS 66061. Internet: http://www.nbrc.org

RESPIRATORY THERAPY TECHNICIANS

Significant Points

- Job opportunities will be in decline.
- An associate's degree is the minimum educational requirement.

Work Description

Respiratory therapy technicians follow specific, well-defined respiratory care procedures under the direction of respiratory therapists and physicians. They help to evaluate, treat, and care for patients with breathing or other cardiopulmonary disorders. They administer oxygen and breathing treatments to ensure their patients are breathing properly. They prepare and test equipment before procedures begin, analyze samples, and maintain patient records.

Work Environment

Respiratory therapy technicians typically work between 35 and 40 hours per week. Some healthcare facilities require patient care continuously, requiring technicians to work evenings and weekends. Direct patient care involves exposure to disease and technicians can minimize their risk of attracting a disease by following proper hygiene protocols. They may be required to stand and walk for long periods of time.

Educational and Legal Requirements

An associate's degree generally is required to work as a respiratory therapy technician. However, the entry-level requirement is a postsecondary certificate from an accredited school.

Employment Trends

Employment Change

Employment decline is projected for respiratory therapy technicians. Most work in respiratory care is being done by respiratory therapists, resulting in limited demand for respiratory therapy technicians. TABLE 28.2 shows some projection data provided by the U.S. Department of Labor for a decrease demand for these positions.

Job Prospects

Respiratory therapy technicians can expect keen competition. Very few openings for respiratory therapy technicians are expected, as the work is increasingly performed by respiratory therapists.

Earnings

Median annual wages for respiratory therapy technicians were $47,810 in May 2014.

TABLE 28.2 Projections Data from the for Respiratory Therapy Technicians, 2014–2024

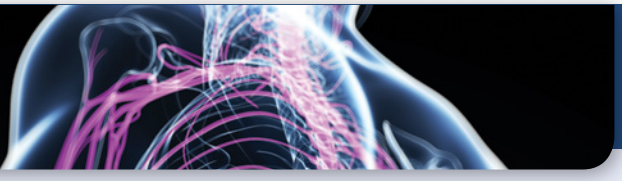
			Change, 2014–2024	
Occupational Title	Employment, 2014	Actual Employment, 2024	Number	Percentage
Respiratory therapy technicians	10,700	8,600	–2,100	–19%

Related Occupations

Workers in related healthcare occupations include physicians, surgeons, and respiratory therapists.

Additional Information

American Association for Respiratory Care, 9425 N. MacArthur Blvd., Suite 100, Irving, TX 75063. Internet: http://www.aarc.org



LEARNING PORTFOLIO

Issues for Discussion

1. Because respiratory therapists deal with a fundamental aspect of living, namely breathing, they often encounter patients with both significant breathing difficulties and anxiety about their health. Identify and discuss what traits are most important to a respiratory therapist to be successful in dealing with this patient population.
2. Some problems respiratory therapists treat are created by patients themselves, such as the side effects from smoking regular or vapor cigarettes. Discuss in class the effects smoking may have on patients, those who surround them, and those who treat them.

Enrichment Activities

1. Watch the career video entitled *Life and Breath* from the American Association for Respiratory Care, Internet: http://c.aarc.org/career/be_an_rt/life_and_breath.cfm. Discuss the role a respiratory therapist plays in various healthcare settings.
2. Respiratory therapists often work with patients who suffer from chronic obstructive pulmonary disease (COPD). Use *Chronic Obstructive Pulmonary Disease Prevalence Maps* from the CDC to learn more about pulmonary problems in the United States, including the state in which you live. Which states have the highest rates of COPD, and which states have the lowest rates of COPD? Internet: Centers for Disease Control and Prevention. *Chronic Obstructive Pulmonary Disease*, http://www.cdc.gov/copd/data.htm
3. Assume you have a friend that is interested in becoming a respiratory therapist. Summarize the advice you would give that person in a one- or two-page paper.

References

1. Committee on Accreditation for Respiratory Care. *Co_ARC Accredited Respiratory Care Program*. Internet: http://www.coarc.com/36.html
2. Commission on Accreditation of Allied Health Education Programs. *Perfusion Programs*. Internet: http://www.caahep.org/Find-An-Accredited-Program/
3. Commission on Accreditation of Allied Health Education Programs. *Polysomnographic Technology Programs*. Internet: http://www.caahep.org/Find-An-Accredited-Program/
4. National Board for Respiratory Care. *Examinations*. Internet: https://www.nbrc.org/Pages/examinations.aspx

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PART FOUR

Healthcare Support Personnel

This section addresses professionals who have limited decision-making responsibilities or have little or no direct contact with patients. Instead, support personnel deliver care under the recommendation and supervision of another health professional. For example, a nursing assistant may be supervised by a registered nurse. Categories of health professionals without direct patient contact are Medical Laboratory Personnel and Health Information Personnel. Careers added to this section are Massage Therapists and Phlebotomists.

Objectives

The following objectives are for all chapters in Part IV. After studying these chapters, the student should be able to:

- Describe the responsibilities and work of each profession.
- Classify the specialties in each profession.
- Discuss the environment in which the work takes place.
- Identify any adjunct personnel who assist the professionals with their work.
- Compare and contrast the following factors among the professions: educational requirements, employment trends, opportunities for advancement, salary potential, and career ladders.
- Identify other professionals who do similar tasks or have similar responsibilities.
- Discuss the advantages of the national organizations to which professionals belong.
- Explain the concept and functions of interdisciplinary teams.

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Dog: Shutterstock/DuxX; Man in lab: Getty Images/iStockphoto;
Dentist: Shutterstock/foto infot; Spine: Shutterstock/Sebastian Kaulitzki

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CHAPTER 29

Clinical Laboratory Personnel*

Key Terms

Automated analyzer
Blood bank technologist
Board of Certification (BOC)
Cell counters
Clinical chemistry specialist
Clinical Laboratory Improvement Act (CLIA)
Cytotechnologist
Hematology specialists and technologists
Histotechnicians and histotechnologists
Immunology scientists and technologists
Medical and clinical laboratory scientists and technicians
Microbiology specialist
National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)
Phlebotomist
Prescribed drug regimen
Skin puncture
Venipuncture

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

THE LABORATORY TEAM

The practice of modern medicine would be impossible without the tests performed in the clinical laboratory. A medical team of pathologists, scientists, and technicians work 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 tests themselves. This job falls to clinical laboratory personnel. Clinical laboratory testing plays a crucial role in the detection, diagnosis, and treatment of disease. **Medical and clinical laboratory scientists and technicians** perform most of these tests.

CLINICAL LABORATORY SCIENTISTS AND TECHNICIANS

Significant Points

1. Excellent job opportunities are expected.
2. Clinical laboratory technologists/scientists usually have a bachelor's degree with a major in medical technology or in one of the life sciences; clinical laboratory technicians generally need either an associate's degree or a certificate.
3. Training programs for clinical laboratory personnel require both didactic classes and hands-on clinical experience in a laboratory.
4. Most jobs will continue to be in hospitals, but employment will grow rapidly in other settings as well.

Work Description

Clinical laboratory testing plays a crucial role in the detection, diagnosis, and treatment of disease. Medical and clinical laboratory scientists, also referred to as medical and clinical laboratory technologists, and medical and clinical laboratory technicians perform most of these tests.

Clinical laboratory personnel examine and analyze body fluids and cells. They look for bacteria, parasites, and other microorganisms; analyze the chemical content of fluids; match blood type for transfusions; and test for drug levels in the blood that show how a patient is responding to treatment. Scientists also prepare specimens for examination, count cells, and look for abnormal blood cells and other abnormalities in body fluids. They use microscopes, **cell counters**, and other sophisticated laboratory equipment **(FIGURE 29.1)**. They also use automated equipment and computerized instruments capable of performing a number of tests simultaneously. After testing and examining a specimen, they analyze the results and relay them to physicians; the results may also be automatically transmitted to the patient's electronic health record.

With increasing automation and the use of computer technology, the work of scientists and technicians has become less hands-on and more analytical. The complexity of tests performed, the level of judgment needed, and the amount of responsibility workers assume depend largely on the amount of education and experience they have. Clinical

FIGURE 29.1 Laboratory technologists use a microscope to identify abnormal cells or the presence of bacteria or viruses.

© Stephen Coburn/Shutterstock

laboratory scientists usually do more complex tasks than clinical laboratory technicians.

Clinical laboratory scientists perform complex chemical, biological, hematological, immunologic, microscopic, and bacteriological tests. Scientists and technicians examine blood and other body fluids with a microscope. They make cultures of body fluid and tissue samples to determine the presence of bacteria, fungi, parasites, or other microorganisms (FIGURE 29.2).

Scientists and technicians analyze samples for chemical content or a chemical reaction and determine concentrations of compounds such as blood glucose and cholesterol levels. They also type and cross-match blood samples for transfusions and type tissue samples for kidney or other organ transplants.

Clinical laboratory scientists evaluate test results, develop and modify procedures, and establish and monitor programs to ensure the accuracy of tests. Some scientists supervise other clinical laboratory scientists and technicians.

Scientists in small laboratories perform many types of tests, whereas those in large laboratories generally specialize in clinical chemistry, microbiology, immunology, cytology or blood banking. **Clinical chemistry specialists**, for example, prepare specimens and analyze the chemical and hormonal contents of body fluids. **Microbiology specialists** examine and identify bacteria and other microorganisms. **Blood bank technologists**, or **hematology specialists and technologists**, collect, type, and prepare blood and its components for transfusions. **Immunology technologists or scientists** examine elements of the human immune system—antigens and antibodies for example—and response to foreign bodies, most commonly viruses and bacteria. **Cytotechnologists** prepare slides of body cells and examine these cells with a microscope for abnormalities that may signal the beginning of a cancerous growth (FIGURE 29.3).

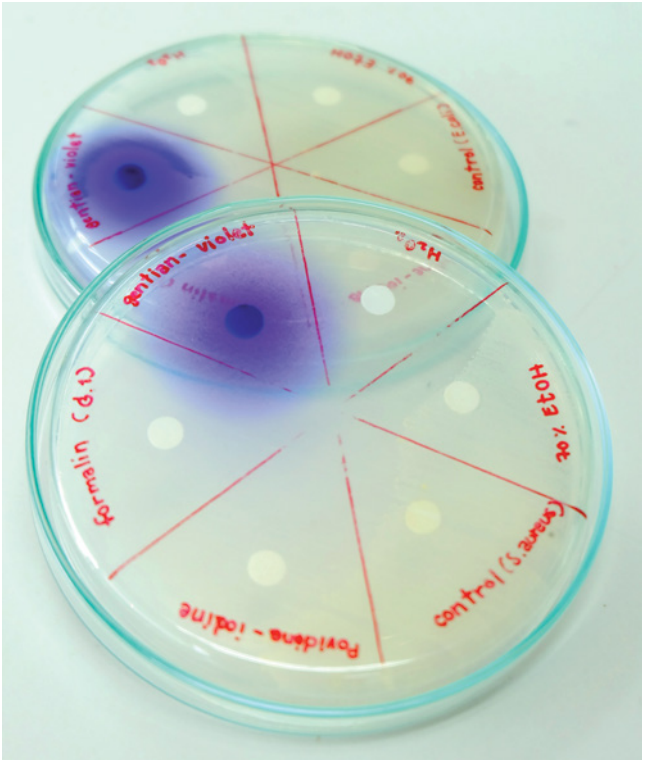

FIGURE 29.2 Microbiologists grow cultures of body fluids to determine the presence of bacteria.
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Molecular biology technologists perform complex protein and nucleic acid testing on cell samples for genetic testing of both inherited and infectious diseases.

Medical laboratory technicians perform less complex tests and laboratory procedures than medical laboratory scientists. Technicians may prepare specimens and operate

FIGURE 29.3 Cytotechnologists prepare slides of cells and examine for abnormalities.
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automated analyzers, for example, or they may perform manual tests in accordance with detailed instructions. They usually work under the supervision of a medical laboratory scientist or laboratory manager or a pathologist or a research scientist. Like scientists, clinical laboratory technicians may work in several areas of the clinical laboratory or specialize in just one. **Phlebotomists** collect blood samples, for example, and histotechnicians prepare tissue specimens for microscopic examination by pathologists.

Work Environment

Laboratory personnel generally have no direct contact with patients and limited contact with other health personnel except for physicians who depend on lab results to make a diagnosis and monitor treatment. Pathologists depend on **histotechnicians and histotechnologists** to prepare slides to use in making a diagnosis. Clinical laboratory personnel are trained to work with specimens that may contain viruses or bacteria with a potential for causing a serious infectious disease such as the flu or pneumonia. When proper methods of infection control and sterilization are followed, few hazards exist. Protective masks, gloves, and goggles often are necessary to ensure the safety of laboratory personnel (FIGURE 29.4).

Working conditions vary with the size and type of employment setting. Laboratories usually are well lit and clean; however, specimens, solutions, and reagents used in the laboratory sometimes produce fumes. Laboratory workers may spend a great deal of time on their feet.

FIGURE 29.4 Lab personnel wearing protective gloves and mask to prevent contact with infectious organisms from human body fluids.

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The hours that clinical laboratory scientists and technicians work vary with the size and type of employment setting. Laboratories within large hospitals and large independent laboratories often operate continuously. Therefore, personnel may work a day, evening, or night shift as well as weekends and holidays. Laboratory personnel in small facilities may work on rotating shifts, rather than on a regular shift. In some facilities, laboratory personnel are on call several nights a week or on weekends, in case of an emergency.

Employment Opportunities

Clinical laboratory scientists and technicians held about 325,200 jobs in 2014. More than half of the jobs were in hospitals. Most of the remaining jobs were in offices of physicians and in medical and diagnostic laboratories. A small proportion was in educational services and in all other ambulatory healthcare services.

Educational and Legal Requirements

Clinical laboratory scientists generally require a bachelor's degree in medical technology or in one of the life sciences; clinical laboratory technicians usually need an associate's degree or a certificate.

Education and Training

Even though the usual requirement for an entry-level position as a clinical laboratory scientist is a bachelor's degree with a major in medical technology or one of the life sciences, it is possible to qualify for some jobs with a combination of education and on-the-job and specialized training. Universities and hospitals offer medical technology programs. Online and distance programs provide access to training for working students and those living in rural areas. All programs require a combination of didactic classes and a clinical laboratory practicum where students receive one-on-one training and supervision from a laboratory staff, usually in a hospital setting. There is strong competition among students to obtain clinical rotations in hospitals because there are not enough medical technology training programs to meet demands.[1]

Bachelor's degree programs in medical technology include courses in chemistry, biological sciences, microbiology, mathematics, and statistics, as well as specialized courses devoted to knowledge and skills used in the clinical laboratory. Many programs also offer or require courses in management, business, and computer applications. The **Clinical Laboratory Improvement Act (CLIA)** requires personnel who perform highly complex tests to have at least an associate's degree.

Medical and clinical laboratory technicians generally have either an associate's degree from a community or junior college or a certificate from a hospital, a vocational or technical school, or the armed forces. A few technicians learn their skills on the job. The **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)** fully accredits about 527 programs for medical and clinical laboratory scientists, medical and clinical laboratory technicians, histotechnologists, histotechnicians, cytogenetic technologists, and diagnostic molecular scientists. NAACLS also approves about 70 programs in phlebotomy and clinical assisting.[2] Other nationally recognized agencies that accredit specific areas for clinical laboratory workers include the Commission on Accreditation of Allied Health Education Programs and the Accrediting Bureau of Health Education Schools.

Licensure

Some states require laboratory personnel to be licensed or registered. Licensure of scientists often requires a bachelor's degree and the passing of an exam, but requirements vary by state and specialty. Information on licensure is available from state departments of health or boards of occupational licensing.

Certification and Other Qualifications

Many employers prefer applicants who are certified by a recognized professional association. Those associations offering certification include the Board of Registry of the American Society for Clinical Pathology (ASCP), the American Medical Technologists, the National Credentialing Agency for Laboratory Personnel, and the Board of Registry of the American Association of Bioanalysts. These associations have different requirements for certification and different organizational sponsors. Graduates of a bachelor's program in medical technology are eligible to take the national exam administered by the **Board of Certification (BOC)** within the American Society for Clinical Pathology (ASCP). Medical laboratory scientists who become certified under ASCP can use the initials MLS behind their name. Those who meet the requirements for technicians are designated as MLT.[3] The American Association of Bioanalysts awards Medical Laboratory Technician certification for those who have met post secondary training requirements and successfully passed the MLT(AAB) generalist examination.[4]

In addition to certification, employers seek clinical laboratory personnel with good analytical judgment and the ability to work under pressure. Scientists in particular are expected to be good at problem solving. Close attention to detail is also essential for laboratory personnel because small differences or changes in test substances or numerical readouts can be crucial to a diagnosis. Manual dexterity and normal color vision are highly desirable, and with the widespread use of automated laboratory equipment, computer skills are necessary. The ability to use complex and specialized laboratory equipment is also necessary for most personnel. Personal characteristics valued by employers are the ability to work independently as well as part of the laboratory team. Laboratory personnel usually have no direct contact with patients except in smaller laboratories, where staff may draw blood from patients in addition to conducting laboratory tests. However, they often communicate results to physicians.

Advancement

Technicians can advance and become scientists through additional education and experience. Scientists may advance to supervisory positions in laboratory work or may become chief medical or clinical laboratory scientists or laboratory managers in hospitals. Manufacturers of home diagnostic testing kits and laboratory equipment and supplies also seek experienced scientists to work in product development, marketing, and sales.

Professional certification and a graduate degree in medical technology, one of the biological sciences, chemistry, management, or education usually speeds advancement. A doctorate usually is needed to become a laboratory director. Federal regulation requires directors of moderately complex laboratories to have either a master's degree or a bachelor's degree, combined with the appropriate amount of training and experience.

Employment Trends

Rapid job growth and excellent job opportunities are expected. Most jobs will continue to be in hospitals, but employment will grow rapidly in other settings as well.

Employment Change

Employment of medical laboratory scientists is expected to grow by 14% between 2014 and 2024, about as fast as all occupations. Employment of medical laboratory technicians is projected to grow 18%, much faster than average. The volume of laboratory tests continues to increase with both population growth and the development of new types of tests.

Technological advances will continue to have opposing effects on employment. On the one hand, new, increasingly powerful diagnostic tests and advances in genomics—the study of the genetic information of a cell or organism—will encourage additional testing and spur employment. On the other hand, research and development efforts targeted at simplifying and automating routine testing procedures may enhance the ability of non-laboratory personnel—physicians, nurses, and patients in particular—to perform tests now conducted in laboratories. TABLE 29.1 provides some projections data from the National Employment Matrix.

TABLE 29.1 Projections Data for Clinical and Medical Laboratory Scientists and Technicians, 2014–2024

Occupational Title	Employment 2014	Projected Employment 2024	Change, 2014–2024	
			Number	Percentage
Clinical laboratory scientists and technicians	328,200	380,300	52,100	16%
Medical and clinical laboratory scientists	164,800	187,900	23,100	14%
Medical and clinical laboratory technicians	163,400	192,400	29,900	18%

Although hospitals are expected to continue to be the major employer of clinical laboratory workers, employment is expected also to grow rapidly in medical and diagnostic laboratories, offices of physicians, and all other ambulatory healthcare services. TABLE 29.2 lists major employers of clinical laboratory workers in 2014.

Job Prospects

Job opportunities are expected to be excellent because the number of job openings is expected to continue to exceed the number of job seekers. An increase in the aging population will lead to a greater need to diagnose medical conditions, such as cancer or type 2 diabetes, through laboratory procedures. Medical laboratory scientists and technicians will be in demand to use and maintain the equipment needed for diagnosis and treatment. The Affordable Care Act is expected to increase demand for laboratory personnel with greater numbers of people having access to health care through insurance plans purchased through Health Exchanges.

Earnings

Medical and clinical laboratory scientists had a median annual salary of $59,430 and a median hourly wage of $28.57 in May 2014. For medical laboratory technicians, the median annual salary was $38,370 and the median hourly wage, $18.45. Average hourly wages are higher for laboratory workers with more education, training, and certification in subspecialties (TABLE 29.3). Supervisors and lead staff also earn higher salaries.

TABLE 29.2 Facilities Employing the Largest Numbers of Medical and Clinical Laboratory Scientists and Clinical Laboratory Technicians, May 2014

	Scientists	Technicians
Hospitals	58	44
Medical and diagnostic laboratories	17	19
Physician offices	8	12
Colleges, universities, and professional schools	5	5

TABLE 29.3 Hourly Wages of Certified Clinical Laboratory Scientists and Technicians by Various Specialties, 2013[5]

Specialty	Hourly Wage
Cytogenetic technologist	$30.00
Cytotechnologist	$33.00
Histotechnician	$26.00
Histotechnologist	$28.00
Laboratory assistant	$17.00
Medical laboratory technician	$21.00
Medical laboratory technologist/scientist	$28.00
Phlebotomist	$16.00
Specialist in blood banking	$32.00

Note: All figures are rounded.

Related Occupations

Clinical laboratory scientists and technicians analyze body fluids, tissue, and other substances using a variety of tests. Chemists and materials scientists, science technicians, and veterinary technologists and technicians perform similar or related procedures.

PHLEBOTOMISTS

Significant Points

1. Employment of phlebotomists is expected to grow faster than average and faster than other health professions.
2. Phlebotomists require postsecondary training including both classroom and clinical experience to qualify for the certification exam.
3. Most jobs for phlebotomists are in hospitals, diagnostic laboratories, and outpatient clinics. Some phlebotomists travel to different sites to draw blood—hospitals, clinics, assisted-living facilities, and nursing homes.
4. Phlebotomists may specialize in population groups that require greater skill in drawing blood—newborns or the elderly.
5. Competition from other health professionals who become certified as phlebotomists may reduce employment opportunities for phlebotomists.

Work Description

Phlebotomists draw blood for tests, research, or blood donations. Some phlebotomists draw blood for other purposes, such as at blood drives where people donate blood. Some of them explain their work to patients and provide assistance if patients have adverse reactions after their blood is drawn. Phlebotomists primarily draw blood, which is then used for different kinds of medical laboratory testing. In medical and diagnostic laboratories, patient interaction is often only with the phlebotomist. Some phlebotomists in blood donor centers may do simple lab procedures such as using a centrifuge to spin a blood sample to separate red blood cells from plasma to determine hematocrit—that is, if a donor has a normal amount of red blood cells—before donating blood.

Phlebotomists use both venipuncture and skin puncture to collect blood. **Venipuncture** is the insertion of a needle into a vein, usually inside the elbow; the needle is attached to a blood collecting tube. A **skin puncture** is another method of taking a small sample of blood for glucose monitoring or blood typing (FIGURE 29.5).

Because of the high volume of blood samples taken by a phlebotomist, they often become very skilled in obtaining samples quickly without causing the patient pain. A skilled phlebotomist who can put a tense patient at ease during the blood draw is valued by the healthcare team.

Work Environment

Phlebotomists work in hospitals, diagnostic laboratories, blood donor centers, and large outpatient clinics or travel to assisted-living facilities or nursing homes to collect blood samples. Phlebotomists may specialize in age groups that are more difficult to obtain blood samples because of small or collapsed veins—in infants, children, or the elderly. Because all blood samples look the same, phlebotomists must identify the patient before drawing blood, label collecting tubes, and enter patient information into a database. In order to avoid causing infection or other complications, phlebotomists must keep their work area and instruments clean and sanitary. Phlebotomists often spend a lot of time standing. Walking is required by phlebotomists who travel to patient's rooms or to assisted-living facilities or nursing homes.

FIGURE 29.5 Phlebotomist doing a skin puncture to draw blood to determine hematocrit at a blood donor center.
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Employment Opportunities

Blood analysis remains an essential function in medical laboratories and hospitals. Demand for phlebotomists will remain high as doctors and other healthcare professionals require blood work for analysis and diagnoses. Federal health legislation will expand the number of patients who have access to health insurance, increasing patient access to medical care. As hospitals and medical laboratories evaluate their staffing needs, phlebotomists may be replaced by other, more skilled healthcare workers.

Educational and Legal Requirements

Phlebotomists typically enter the occupation with a postsecondary non-degree award from a phlebotomy program.

Educational and Training

Programs for phlebotomy are available from community colleges, vocational schools, or technical schools. These programs usually take less than one year to complete and lead to a certificate or diploma. Programs have classroom and laboratory portions and include instruction in anatomy, physiology, and medical terminology. Some phlebotomists may enter the occupation with a high school diploma and are trained to be a phlebotomist on the job.

Licensure

Individual states determine licensure requirements. Most states do not require phlebotomists to be licensed except for the state of California. Information on licensure is available from state departments of health or boards of occupational licensing.

Certification and Other Qualifications

Many employers prefer applicants who are certified by a recognized professional association. Certification typically includes education and experience requirements and successful completion of an examination which may include demonstration of the ability to carry out the tasks of a phlebotomist—both venipuncture and skin puncture. Laboratory experience must be in a CLIA-regulated laboratory. Those associations offering certification include the Board of Registry of the American Society for Clinical Pathology (ASCP), the National Center for Competency Testing (NCCT), the American Certification for Healthcare Professionals (ACA), and the American Medical Technologists (AMT). These associations have different requirements for education and experience.

Other qualifications are excellent eyesight including color vision, good hand–eye coordination, accuracy, basic computer skills, and the ability to work in stressful situations and to put nervous patients at ease.

Advancement

Phlebotomists may specialize in working with an age group that presents a challenge to obtaining a blood sample. For example, newborns may require that blood be drawn from a capillary in the heel, or an elderly patient may require an experienced phlebotomist to locate a vein for drawing blood in a location other than the inner arm. Some phlebotomists take additional training to become a medical laboratory technician or a medical assistant or another professional degree program in the healthcare field. For students who are unsure of enrolling in a health career program, working as a phlebotomist would provide exposure to the healthcare environment before investing the time and money in a career that requires longer training.

Employment Trends

Blood analysis remains an essential function in medical laboratories and hospitals. Demand for phlebotomists will remain high as doctors and other healthcare professionals require blood work for analysis and diagnoses. The Affordable Care Act will expand the number of patients who have access to health insurance, increasing patient access to medical care. However, as hospitals and medical laboratories evaluate their staffing needs, phlebotomists may be replaced by other more skilled healthcare workers. For example, there may be competition from licensed practical nurses and registered nurses who are eligible to take the exam to become certified as a phlebotomist.

Employment Change

Employment of phlebotomists is projected to grow 25% from 2014 to 2024, much faster than average for all occupations. Hospitals, diagnostic laboratories, blood donor centers, and other locations will need phlebotomists to perform blood draws. TABLE 29.4 provides some projections data from the National Employment Matrix.

Job Prospects

Job prospects are best for phlebotomists who receive certification from one of several reputable organizations.

Earnings

The median hourly wage for phlebotomists in May 2014 was $14.74 per hour and the median annual salary for phlebotomists was $30,670.

Related Occupations

Dental assistants, medical assistants, medical and clinical laboratory technicians and technologists, medical records and health information technologists, medical transcriptionists, veterinary technologists and technicians, veterinary assistants, lab animal caretakers and physician assistants perform similar or related procedures.

ADDITIONAL INFORMATION

Contact one of the following accredited and approved educational programs for clinical laboratory personnel:

- Accrediting Bureau of Health Education Schools, 7777 Leesburg Pike, Suite 314 N., Falls Church, VA 22043. Internet: http://www.abhes.org/

TABLE 29.4 Projections Data for Phlebotomists, 2014–2024

Occupational Title	Employment 2014	Projected Employment 2024	Change, 2014–2024	
			Number	Percentage
Phlebotomists	112,700	140,800	28,100	25%

- Commission on Accreditation of Allied Health Education Programs, 1361 Park Street, Clearwater, FL 33756. Internet: www.caahep.org/
- National Accrediting Agency for Clinical Laboratory Sciences, 5600 N. River Rd., Suite 720, Rosemont, IL 60018. Internet: http://www.naacls.org

Information on certification is available from:

- American Association of Bioanalysts, Board of Registry, 906 Olive St., Suite 1200, St. Louis, MO 63101. Internet: http://www.aab.org
- American Medical Technologists, 10700 W. Higgins Rd., Suite 150, Rosemont, IL 60018. Internet: http://www.americanmedtech.org/
- American Society for Clinical Pathology (ASCP), 33 West Monroe St., Suite 1600, Chicago, IL 60603. Internet: http://www.ascp.org

Additional career information is available from:

- American Association of Blood Banks, 8101 Glenbrook Rd., Bethesda, MD 20814. Internet: http://www.aabb.org
- American Dental Education Association, ExploreHealthCareers.org, 655 K Street, NW, Suite 800, Washington, DC, 20001. Internet: explorehealthcareers.org
- American Society for Clinical Laboratory Science, 1861 International Drive, Suite 200, McLean, VA 22102. Internet: http://www.ascls.org
- American Society for Cytopathology, 100 West 10th St., Suite 605, Wilmington, DE 19801. Internet: http://www.cytopathology.org
- Clinical Laboratory Management Association, 330 N. Wabash Avenue, Suite 2000, Chicago, IL 60611. Internet: http://www.clma.org/
- National Society for Histotechnology, 8850 Stanford Blvd, Suite 2900, Columbia, MD 21045. Internet: http://www.nsh.org/what-histotechnology

General information on phlebotomists:

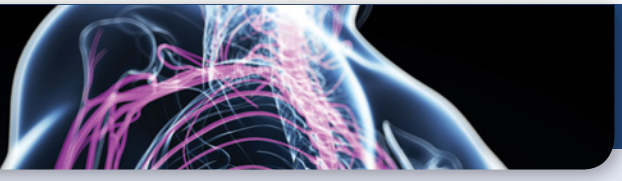
- American Dental Association. ExploreHealthCareers.org. Internet: http://explorehealthcareers.org/en/home
- U.S, Department of Labor. CareerOneStop. Career and Cluster Videos. *Phlebotomists*. Internet: http://wpc.2a70.edgecastcdn.net/002A70/CareerVideos/29-2012.09.mp4

Information on training programs is available from these organizations:

- Center for Phlebotomy Education, P.O. Box 5, Corydon, IN 47112. Internet: http://www.phlebotomy.com/
- National Accrediting Agency for Clinical Laboratory Sciences, 5600 N. River Rd., Suite 720, Rosemont, IL 60018. Internet: http://www.naacls.org

Information on becoming certified as a phlebotomist is available from these websites:

- American Certification Agency for Healthcare Professionals, P.O. Box 58, Osceola, IN 46561. Internet: www.acacert.com
- American Medical Technologists, 10700 W. Higgins Road, Suite 150, Rosemont, IL 60018. Internet: www.americanmedtech.org
- American Society for Clinical Pathology, Board of Certification, 33 W. Monroe, #1600, Chicago, IL 60603. Internet: www.ascp.org
- National Center for Competency Testing, 7007 College Boulevard, Suite 385, Overland Park, KS 66211. Internet: www.nectine.com
- National Healthcareer Association, 11161 Overbrook Road, Leawood, KS 66211. Internet: www.nhanow.com/



LEARNING PORTFOLIO

Issues for Discussion

1. View the video, *Medical Laboratory Science Information Session – January 21, 2015* (Internet: https://www.youtube.com/watch?v=gxRVlLW2ALo). The video is a presentation from British Columbia Institute of Technology in Canada. Go to 5:20 minutes and view through 12:00 minutes for the case study of a young boy with kidney disease. The case study highlights six areas within medical and clinical laboratory science that complete analyses to make a diagnosis and to treat his disease. As you view the video list the tests done within each of the six areas of the lab to make a diagnosis and then to monitor treatment: 1) clinical chemistry, 2) histology, 3) molecular diagnostic laboratory, 4) transfusion science (blood banking), 5) microbiology, 6) hematology, and 7) monitoring treatment.
2. Discuss the pros and cons of obtaining certification as a specialist in an area of medical laboratory technology: blood banking, chemistry, microbiology, hematology, cytotechnology.
3. Discuss the advantages and disadvantages of automation in a laboratory. How will automation impact employment opportunities for medical laboratory personnel? Review the video that demonstrates automation in a large laboratory. Thermo Scientific. *Streamline Sample Management.* Internet: http://www.thermoscientific.com/content/tfs/en/products/clinical-chemistry-analyzers.html
4. Review the video that explains the job responsibilities of a phlebotomist. Compare the responsibilities of a phlebotomist with a medical laboratory technician. U.S. Department of Labor. CareerOneStop. Career and Cluster Videos. *Phlebotomists.* Internet: http://wpc.2a70.edgecastcdn.net/002A70/CareerVideos/29-2012.09.mp4

Enrichment Activities

1. Review *A Life Saved: Laboratory Professionals Make a Difference* YouTube video which describes how a variety of laboratory personnel contribute to the diagnosis and treatment of acute leukemia in a child. Source: American Society for Clinical Laboratory Science. ASCLSonline: https://youtube/T0OZfMzxU-o?t=569
2. Review the video, *Clinical Laboratory Technician, Technologist & Scientist* (Internet: https://www.youtube.com/watch?v=wdQEjRDyzIk). Describe the options for becoming a clinical laboratory scientist for students who already have a bachelor's degree in biology or chemistry.
3. Review the video that explains the roles and responsibilities of medical laboratory technicians (Internet: http://wpc.2a70.edgecastcdn.net/002A70/CareerVideos/29-2012.00.mp4). Then review the video for medical laboratory technologists (scientists) (Internet: http://wpc.2a70.edgecastcdn.net/002A70/CareerVideos/29-2011.00.mp4). How are the educational requirements and job responsibilities the same and different?
4. Review the video from the National Society for Histotechnology, *Preparing for a Histotechnology Career in the US* (Internet: https://www.youtube.com/watch?v=sBfA30Ouc8w). Describe tools used by a histology technician or technologist. What personal characteristics are important for a career as a histotechnician or histotechnologist?
5. Review the ASCP Certification options to become a certified phlebotomist. There are two certifications, Phlebotomy Technician (PBT) and Donor Phlebotomy Technician (DPT). Download the Procedures Booklet: *ASCP Board of Certification. U.S. (only) Procedures for Examination & Certification.* Internet: http://www.ascp.org/Board-of-Certification/GetCertifiedwww.ascp.org

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2. National Accrediting Agency for Clinical Laboratory Sciences. *NAACLS Accredited and Approved Program Search.* Internet: http://www.naacls.org/search/programs.asp
3. ASCP Board of Certification. *U.S. (Only) Procedures for Examination & Certification.* January 2015.
4. American Association of Bioanalysts. *MLT(AAB) – Medical Laboratory Technician (Generalist) Certification.* Internet: http://www.aab.org/aab/MLT.asp
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CHAPTER 30

Massage Therapists and Recreational Therapists*

Key Terms

American Dance Therapy Association
American Therapeutic Recreation Association
Art therapist (AT)
Arts Therapy Credentials Board (ARCB)
Art Therapist Registered-Board Certified (ATR-BC)
Board Certified-Dance/Movement Therapist (BC-DMT)
Cardiopulmonary resuscitation (CPR) certification
Certified Movement Analyst (CMA)
Certified Therapeutic Recreation Specialist (CTRS)
Complementary and alternative medicine
Dance movement therapy (DMT)
Federation of State Massage Therapy Boards (FSMTB)
Manual dexterity
Massage and Bodywork Licensing Examination (MBLEx)
Massage therapy
Music Therapist-Board Certified (MT-BC)
National Certification Board for Therapeutic Massage & Bodywork (NCBTMB)
National Coalition of Creative Arts Therapies Associations, Inc., (NCCATA)
National Council for Therapeutic Recreation Certification (NCTRC)
Recreational therapist (RT)
Recreation therapy
Registered art therapist (ATR)
Registered Dance/Movement Therapist (R-DMT)
Therapeutic recreation (TR)

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

ALTERNATIVE AND OTHER THERAPIES

Massage has been part of traditional Chinese medicine for 4,000 years but has been slow to be recognized as a health profession in the United States. Swedish massage was introduced to the United States in 1850 and was practiced by some physicians. However, only since the 1970s, as part of the **complementary and alternative medicine** movement, has **massage therapy** become popular.[1]

The expected demand for massage therapists is currently at an all-time high with a projected growth of 22% between 2014 and 2024 according to the U.S. Department of Labor (FIGURE 30.1).

Before 1988 very few states regulated massage therapy. The movement to license massage therapists began in 1992 when two different organizations developed licensing exams. The **National Certification Board for Therapeutic Massage & Bodywork (NCBTMB)** was founded in 1992 and administered the first licensing exam the same year. Also in 1992, the **Federation of State Massage Therapy Boards (FSMTB)** created the licensure exam, **Massage and Bodywork Licensing Examination (MBLEx)**, to allow reciprocity between states. In 2014, the NCBTMB and FSMTB agreed that only FSMTB would administer the *licensure* exam, MBLEx, for all new graduates, and that NCBTMB would be responsible for board *certification* of licensed massage therapists.[2]

FIGURE 30.1 The demand for massage therapists is expected to increase by 22% between 2014 and 2024.

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In contrast, **recreation therapy** originated as "Special Services" in the U.S. Army during World War II in the 1940s, and in 1945 became known as "recreation," a section under the Rehabilitation Medicine Service Office of the Veterans Administration (VA).[3] By 1953, the National Association of Recreational Therapy was organized, and credentialing of recreational therapists began in 1956 through the Commission for the Advancement of Hospital Recreation.[4] Since 1981, the **National Council for Therapeutic Recreation Certification (NCTRC)** has certified recreational therapists.[5] Currently, the VA's therapeutic recreation program offers social activities, games and sports, outdoor recreation, and arts and crafts. The program also includes music therapy, dance therapy, and psychodrama.[3]

Even though recreational therapists may include art, music, or dance as part of their treatment plan, each of these artistic fields offers a career that combines artistic skills with the skills as a therapist. All of these health careers developed in response to a need to serve armed services personnel affected by the trauma of war. Music therapy began after World War I, while recreation therapy, art therapy, and dance therapy began after World War II.

The **National Coalition of Creative Arts Therapies Associations, Inc. (NCCATA)** is an alliance of professional associations that promotes the arts as a therapeutic modality for treating disabilities and illness. The coalition includes art therapy, dance/movement therapy, and music therapy as well as poetry therapy and psychodrama.[6] Dance and art techniques are used as nonverbal means of communication and expression, and, along with music, are often useful in helping patients improve physical, emotional, cognitive, and social functioning. Art therapy emerged in the mental health field in the 1940s as an approach to explore feelings and conflicts and manage behavior and addictions. The American Music Therapy Association was founded in the 1950s to gain professional status for music therapists who used vocal and instrumental music with individuals and groups to promote social, emotional, and cognitive function. Dance therapy integrates body, mind, and spirit through movement.[7]

This chapter will discuss massage therapy and recreation therapy in detail with only a brief overview of art, music, and dance therapies.

MASSAGE THERAPISTS

Significant Points

- Massage therapy is a rapidly growing healthcare profession.
- Postsecondary education training combining classroom study and clinical experience is required to become eligible for certification or registration.

- The majority of new massage therapists already have a career in either body movement or health care.
- Most massage therapists are self employed and work an average of 18 hours a week.

Work Description

Massage therapists treat clients by using touch to manipulate the soft tissues—muscles, tendons, and connective tissue. Stimulation from massage often improves joint mobility and range of motion; however, direct work on the skeleton is considered outside of the scope of practice. With their touch, therapists relieve pain and improve circulation, relieve stress and promote relaxation, and aid in the general wellness of clients. There is scientific evidence that massage therapy may alleviate back pain and improve the quality of life for individuals with depression, cancer, and HIV/AIDS.[8]

For an initial visit a massage therapist will obtain a medical history, including symptoms or areas of pain from a client. During therapy, the therapist is able to identify tense and painful areas of the body and manipulate muscles to release muscle tightness. Therapists talk with clients about what they hope to achieve through massage. Usually, the type of massage depends on the client's needs and physical condition. For example, therapists may use a special technique for elderly clients that they would not use for athletes. Some forms of massage are given solely to one type of client; for example, prenatal massage is given to pregnant women.

Massage therapists use their hands, fingers, forearms, elbows, and sometimes feet to knead muscles and soft tissues of the body. Therapists may use lotions and oils and massage tables or chairs when treating a client. A massage can be as short as 5–10 minutes or could last more than an hour. Therapists can specialize in many different types of massage, called modalities. Swedish massage, deep-tissue massage, and sports massage are just a few of the many modalities of massage therapy. Most massage therapists specialize in several modalities, which require different techniques.

Some massage therapists suggest personalized treatment plans for their clients and often instruct the client on techniques to practice at home—for example, stretching, muscle strengthening, and improving posture to prevent muscle pain. They also may offer information about additional relaxation techniques to practice between sessions. The therapist documents each treatment session and recommends follow-up therapy visits.

Work Environment

Therapeutic massage is employed throughout the healthcare system for patients ranging from premature infants to the elderly. Massage therapists work in an array of settings, both private and public, such as private offices, hospitals and drug treatment centers, and pain clinics as well as nursing homes, hotels, spas, airports, and fitness centers. Many have a home-based private practice or travel to clients' homes and those who are self employed provide their own table or chair, sheets, pillows, and body lotions or oils.

A massage therapist's working conditions depend heavily on the location and what the client wants. For example, a massage meant to help rehabilitate a client with an injury may be conducted in a well-lit setting with several other clients receiving treatment in the same room. But when giving a massage to help clients relax, massage therapists generally work in dimly lit settings and use candles, incense, body oils, and calm, soothing music.

Massage therapists must feel comfortable using touch to treat clients. Most massage therapists are sole practitioners, and many work part time, as the work can be physically demanding, requiring **manual dexterity** and dynamic strength, especially for deep-muscle massage. Massage therapists can injure themselves if they do not use the proper techniques. Repetitive-motion problems and fatigue from standing for extended periods are most common injuries. Therapists can limit these risks by using good body mechanics, spacing sessions properly, exercising, and, in many cases, receiving regular massage themselves.

Good listening skills are important to identify sources of the client's pain and response to massage therapy. Since most therapists are self employed they often do business-related tasks such as marketing and maintaining financial records. They also may need to buy supplies and do laundry. In addition, massage therapists may work closely with other members of the healthcare team, including physicians, physical therapists, chiropractors, and acupuncturists.

Employment Opportunities

There were 168,800 employed as massage therapists in May 2014.[9] According to an American Massage Therapy Association survey, most massage therapists enter the profession as a second career from a first career that may include other forms of bodywork or work as a healthcare professional.[10] About one-half worked in personal care services for massage therapy franchises and one-third worked in the offices of other health professionals (TABLE 30.1).

TABLE 30.1 Facilities with the Largest Numbers of Massage Therapists, 2014[10]

Personal care services	47%
Offices of other health professionals	31%
Travelers accommodation (hotels)	9%

Educational and Legal Requirements

Educational standards and requirements for massage therapists vary by state or other locality. Most states regulate massage therapy and require massage therapists to have a license or certification.

Education and Training

Massage therapists typically complete a postsecondary education program of 500 to 1,000 hours of study and clinical experience, although standards and requirements vary by state. Educational programs are typically found in private or public postsecondary institutions or community colleges.

A high school diploma or equivalent degree is usually required for admission. Massage therapy programs generally include both classroom study and hands-on practice of massage techniques. Programs cover subjects such as anatomy, physiology, kinesiology, and pathology, a study of diseases, business management, and ethics. The length of the program will vary with the program and educational and work background of the applicant. For example, students already working in a healthcare field will be able to finish the program more quickly because prerequisite courses such as English, health careers, physiology and anatomy, and medical terminology will not be required. On the other hand, recent high school graduates will need to take the prerequisites in addition to several courses in massage therapy. Programs may concentrate on certain modalities, or specialties, of massage. Several programs also offer job placement and continuing education. Both full-time and part-time programs are available.

Licensure

The FSMTB administers the MBLEx for all states that require it for licensure for massage therapists. Not all states do, however; some states require that the person seeking a license have NCBTMB board certification, and others will accept either the MBLEx or NCBTMB certification. As of 2015, five states did not require licensure—Kansas, Minnesota, Oklahoma, Vermont, and Wyoming—and two other states, New York and Hawaii, regulate massage therapy but require passage of a state-administered exam for licensure.[11] In Massachusetts, as of 2010 no exam is required, but applicants must provide transcripts from an approved school or provide evidence that, prior to 2010, they either passed the MBLEx or held NCBTMB certification.[12] In states with massage therapy regulations, workers must get a license or certification after graduating from an approved program and before practicing massage. Passing an exam is usually required for licensure.

Certification and Other Qualifications

Board certification replaced national certification in 2013, and by December 31, 2016, all nationally certified massage therapists will have transitioned to board certification since national certification will no longer be valid. Board certification as a massage therapist is considered a more advanced level of practice, and most therapists are also required to successfully pass the licensing exam, MBLEx, before applying for certification. The requirements for becoming board certified are (1) to pass the Board Certification Exam for Therapeutic Massage & Bodywork (BCETMB), (2) complete additional hours of education and professional hands-on experience, (3) complete **cardiopulmonary resuscitation (CPR) certification** training, and (4) pass a national background check. Board certification must be renewed every two years.[13] Many states require massage therapists to complete continuing education credits and to renew their license periodically. Those wishing to practice massage therapy should look into legal requirements for the state and other locality in which they intend to practice.

Personal qualifications required to be successful as a massage therapist include excellent communication skills to identify the client's goals of therapy and to explain the process of therapy and expected outcome of therapy—reducing muscle tightness and pain, for example. Empathy and the ability to build trust is necessary for repeated visits and referrals from other health professionals. Decision-making skills are also necessary to evaluate the client's needs and provide treatment to meet the needs of each individual client.

Advancement

Board certification is required by some hospitals and high-end spas. Massage therapists with board certification can expect to be more competitive in obtaining jobs with higher salaries. Other advancement opportunities are becoming an instructor or supervisor for training new massage therapists and initiating or participating in research to demonstrate the health benefits of massage.

Employment Trends

As more healthcare providers understand the benefits of massage, demand will increase as these services become part of treatment plans. Also, as more therapists become certified, the practice of massage is likely to be respected and accepted by more people as a way to treat pain and to improve overall wellness.

Massage also offers specific benefits to particular groups of people whose continued demand for massage services will lead to overall growth for the occupation. For example, some sports teams hire massage therapists to help give their athletes relief from pain and to rehabilitate clients with injuries.

Demand for massage services will grow as the baby-boom generation seeks these services as a way to help maintain their health as they age. Older people in nursing homes or assisted-living facilities also are finding benefits from massage, such as increased energy levels and reduced health problems. Demand for massage therapy should grow among older age groups because many older adults are enjoying longer, more active lives.

In addition, the number of massage clinic franchises has increased in recent years. Many franchised clinics offer more affordable massages than those provided at spas and resorts, making massage services available to a wider range of customers. However, demand for massage services may be limited by the overall state of the economy. During tough economic times, both the number of people who seek massage therapy and the frequency of their massages may decline.

Employment Change

Employment of massage therapists is projected to grow 22% from 2014 to 2024, much faster than the average for all occupations. Continued growth in the demand for massage services will lead to new openings for massage therapists.

Job Prospects

Opportunities should be available to those who complete formal programs and become board certified. However, new massage therapists should expect to work only part time until they can build their own client base. Even though the total number of massage therapists is high (TABLE 30.2), the majority work an average of 18 hours a week as an independent practitioner instead of as an employee.[9]

Because referrals are an important source of work for massage therapists, marketing and networking will increase the number of job opportunities. Joining a professional association also can help build strong contacts and further increase the likelihood of steady work. It may also be helpful for massage therapists who are seeking to attract new clients to complete education programs in specific modalities. For example, massage therapists may specialize in massage during pregnancy or in manual lymphatic drainage for women who have had surgery for breast cancer.

Earnings

The median hourly wage was $17.88 and the median annual salary for massage therapists was $37,180 in May 2014. Hourly fees for massage therapy vary widely, depending upon geographic location and work setting. A massage therapist working in a large metropolitan area or in a high-end salon might charge up to $90 per hour, while a home-based therapist in a small town might charge $40 to $50 per hour.[14] Most therapists earn a combination of wages and tips. Because therapists work by appointment in most cases, their schedules and the number of hours worked each week can vary considerably, as can weekly income. Often, health professionals become licensed massage therapists to complement their work as a nurse or physical therapist or work as a massage therapist first and then complete course work to become a registered nurse or physical therapist.

Related Occupations

Similar occupations are athletic trainers and exercise physiologists, physical therapists, physical therapy assistants and aides.

RECREATIONAL THERAPISTS

Significant Points

- Applicants for recreational therapist jobs will experience competition.
- A bachelor's degree in therapeutic recreation is the usual educational requirement.
- Some states regulate recreational therapists through licensure, registration, or regulation of titles, but requirements vary.
- Recreational therapists should be comfortable working with persons who are ill or who have disabilities.

Work Descriptions

The **American Therapeutic Recreation Association** defines recreational therapy as "a treatment service designed to restore, remediate and rehabilitate a person's level of functioning and independence in life activities, to promote health and wellness as well as reduce or eliminate the activity limitations and restrictions to participation in life situations caused by an illness or disabling condition."[15] **Recreational therapists (RTs)** are employed in **therapeutic recreation (TR)** services, and they plan, direct, and coordinate recreation-based treatment programs for people with disabilities, injuries, or illnesses. RTs use a variety of modalities, including arts and crafts, drama, music and dance, sports, games, and community reintegration field trips to help maintain or improve a patient's physical, social, and emotional well-being.

TABLE 30.2 Projections Data for Massage Therapists, 2014–2024

			Change, 2014–2024	
Occupational Title	Employment, 2014	Projected Employment, 2024	Number	Percentage
Massage therapist	168,800	205,200	36,500	22%

Therapists help individuals reduce depression, stress, and anxiety; recover basic motor functioning and reasoning abilities; build confidence; and socialize effectively so that they can enjoy greater independence and reduce or eliminate the effects of their illness or disability. For example, a therapist may introduce a therapy dog to patients who need help managing their depression or anxiety (FIGURE 30.2).

In addition, therapists help people with disabilities integrate into the community by teaching them how to use community resources for example, riding a bus or participating in recreational activities offered through parks or senior centers. RTs are different from recreation workers, who organize recreational activities primarily for enjoyment.

In acute healthcare settings, such as hospitals and rehabilitation centers, RTs treat and rehabilitate individuals with specific health conditions such as alcohol or drug addiction, spinal cord or traumatic brain injuries, after a heart attack or stroke, or with mental illness. Therapists usually work in conjunction or collaboration with physicians, nurses, psychologists, social workers, and physical and occupational therapists. In long-term and residential care facilities, RTs use leisure activities, especially structured group programs, to improve and maintain their clients' general health and well-being. They also may provide interventions to prevent the client from suffering further medical problems and complications.

RTs assess clients by gathering information from observations, medical records, standardized assessments, medical staff, clients' families, and clients themselves. Based on this information, they develop and carry out therapeutic interventions consistent with the clients' needs and interests. For example, they may encourage clients who are isolated or who have limited social skills to play games with others, and they may teach right-handed people with right-side paralysis how to use their unaffected left side to throw a ball or swing a racket. Recreational therapists may instruct patients in relaxation techniques to reduce stress and tension, stretching and limbering exercises, proper body mechanics for participation in recreational activities, pacing and energy conservation techniques, and team activities. As they work, therapists observe and document a patient's participation, reactions, and progress.

Community-based RTs may work in parks and recreation departments, special-education programs for school districts, or assisted-living, adult day care, and substance abuse rehabilitation centers. In these programs, therapists use interventions to develop specific skills, while providing opportunities for exercise, mental stimulation, creativity, and fun. Those few who work in schools help counselors, teachers, and parents address the special needs of students, including easing disabled students' transition into adult life.

FIGURE 30.2 Recreational therapists use therapy dogs to treat anxiety and depression.

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Work Environment

RTs provide services in special activity rooms, but also use offices to plan their activities and prepare documentation. When working with clients in community integration programs, they may travel locally to teach clients how to use public transportation and other public amenities, such as parks, playgrounds, swimming pools, restaurants, and theaters. Therapists often lift and carry equipment. RTs generally work a 40-hour week that may include some evenings, weekends, and holidays.

Employment Opportunities

Recreational therapists held about 18,600 jobs in 2014. The majority were in hospitals and skilled nursing facilities (TABLE 30.3). Other RTs worked in state and local government agencies and in ambulatory care services. They also worked in substance abuse centers, rehabilitation centers, and parks and recreation departments. Only a small number of therapists were self employed, generally contracting with long-term care facilities or community agencies to develop and oversee programs.

TABLE 30.3 Facilities Employing the Largest Numbers of Recreational Therapists, 2014

Hospitals	35%
Nursing care facilities	20%
Government	19%

Educational and Legal Requirements

A bachelor's degree with a major or concentration in therapeutic recreation is the usual requirement for entry-level positions. Some states regulate RTs, but requirements vary.

Education and Training

Most entry-level RTs need a bachelor's degree in therapeutic recreation, or in recreation with a concentration in therapeutic recreation. People may qualify for paraprofessional positions with an associate's degree in therapeutic recreation or another subject related to health care. An associate's degree in recreation therapy, training in art, drama, or music therapy, or qualifying work experience may be sufficient for activity director positions in nursing homes.

There are more than 80 academic programs that prepare students to become RTs. Most offer bachelor's degrees, although some also offer master's or doctoral degrees. Therapeutic recreation 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.

Licensure

Some states regulate RTs through licensure, registration, or the regulation of titles. Requirements vary by state. In 2015, New Hampshire, North Carolina, Oklahoma, and Utah required licensure to practice as a recreational therapist, while California and Washington state had other regulations that apply to RT professionals.[16]

Certification and Other Qualifications

Most employers, particularly those in hospitals and other clinical settings, prefer to hire certified RTs. The National Council for Therapeutic Recreation Certification (NCTRC) offers the **Certified Therapeutic Recreation Specialist (CTRS)**® credential. Certification requires a bachelor's degree, completion of a supervised internship (normally completed as part of their degree program) of at least 560 hours, and passing an exam. Although therapists typically need at least a bachelor's degree in recreational therapy, in some cases therapists may qualify for certification with an alternate combination of education, training, and experience. Therapists must also take continuing education classes to maintain certification.

NCTRC also offers specialty certification in five areas of practice: behavioral health, community inclusion services, developmental disabilities, geriatrics, and physical medicine/rehabilitation. Therapists may also earn certificates from other organizations to show proficiency in specific therapy techniques, such as aquatic therapy or aromatherapy (**FIGURE 30.3**).

Recreational therapists must be comfortable working with people who are ill or disabled. Therapists must be patient, tactful, and persuasive when working with people who have a variety of special needs. Ingenuity, a sense of humor, and imagination are needed to adapt activities to individual needs, and good physical coordination is necessary to demonstrate or participate in recreational activities.

FIGURE 30.3 Recreational therapists may specialize in aquatic therapy.
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Advancement

Therapists may advance to supervisory or administrative positions or obtain specialty certification. Some teach, conduct research, or consult for health or social service agencies.

Employment Trends

Overall employment of RTs is expected to grow about as fast as average for all occupations. Competition for jobs is expected.

Employment Change

Employment of RTs is expected to increase 12% from 2014 to 2024, about as fast as average for all occupations. As the large baby-boom generation ages, they will need RTs to help treat age-related injuries and illnesses. Older persons are more likely to suffer from stroke, Alzheimer's disease, and mobility-related injuries that require recreational therapy. Continued growth is expected in nursing care facilities, adult daycare programs, and other settings that care for geriatric patients. Therapists will also be needed to help healthy seniors remain active in their communities and maintain their independence later in life.

In addition, the number of people with chronic conditions such as diabetes and obesity is growing. Recreational therapists will be needed to help patients maintain their mobility and to teach patients about managing their conditions. Therapists will also be needed to plan and lead programs designed to maintain overall wellness through participation in activities such as camps, day trips, and sports. Healthcare facilities will support a growing number of jobs in settings offering short-term mental health and alcohol or drug abuse treatment services. Rehabilitation, home health care, and transitional programs will provide additional jobs. Legislation requiring federally funded services for students with disabilities will continue to shape the need for RTs in educational settings.

TABLE 30.4 Projections Data for Recreational Therapists, 2014–2024

			Change, 2014–2024	
Occupational Title	Employment, 2014	Projected Employment, 2024	Number	Percentage
Recreational therapists	18,600	20,900	2,200	12%

Job Prospects

Job prospects will be best for RTs with both a bachelor's degree and certification. Therapists who specialize in working with the elderly or who earn certification in geriatric therapy may have the best job prospects. Opportunities also should be good for therapists who hold specialized certifications such as aquatic therapy, meditation, or crisis intervention. Recreational therapists will experience competition for jobs in certain regions of the country. Lower-paid recreational therapy aides may be increasingly used in an effort to contain costs. TABLE 30.4 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median annual earnings of RTs were $44,000, and median hourly wages were $21.15 per hour in May 2014. Median annual earnings in the industries employing the largest numbers of RTs in May 2014 are included in TABLE 30.5.

TABLE 30.5 Median Annual Earnings in the Industries Employing the Largest Numbers of Recreational Therapists, 2015

Government	$55,500
Hospitals: state, local, private	$48,320
Ambulatory healthcare services	$46,200
Nursing care facilities	$39,990

Related Occupations

Recreational therapists primarily design activities to help people with disabilities lead more fulfilling and independent lives. Other workers who have similar jobs are occupational therapists, physical therapists, rehabilitation counselors, special education teachers, recreation workers, and health educators.

Art Therapists

Art therapy emerged as a mental health profession in the 1940s. The most practical application of art therapy has been with those suffering from mental disorders, developmental disorders, or other problems of social and psychological development, but innovative work has also been done on a variety of other problems. For example, art therapy is helpful to distract the focus from pain to comfort and creativity in those with chronic pain; and in those with Alzheimer's, art therapy is used to trigger short-and long-term memory and reduce agitation. Participation in art therapy facilitates cognitive retraining in those with head injuries. Art therapy is also beneficial for those who have experienced trauma through combat, abuse, or natural disasters.[17]

Art therapists (ATs) work with people of all ages who have various degrees of impairment. They may practice with individuals, groups, 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 injured, deaf, blind, physically handicapped, and multiple disabled. Many ATs who work in clinics also teach art therapy in colleges or universities, and may do research on some aspect of therapy. However, the primary involvement of most ATs is with clients in some type of clinical setting (FIGURE 30.4).

ATs apply theories and techniques of human development, psychology, and counseling together with their knowledge and skills in the creative process of visual art forms such as drawing, painting, and sculpture to treat clients. Art therapy is based on the use of art as a tool for nonverbal expression and communication. Art therapy attempts to resolve the individual's emotional conflicts, manage behavior and addictions, reduce anxiety and depression, and encourage personal growth and self-understanding.[17]

ATs consult with members of the medical health team to diagnose patients' problems. Combining art, education, and insight, ATs assess their patients' problems, strengths, and weaknesses, and determine a course of treatment best suited to accomplish specific treatment goals. ATs 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. ATs often work as members of teams of other professionals and coordinate their activities with those of other therapists.

FIGURE 30.4 Art therapists work with people of all ages with physical and mental disabilities.

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ATs 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; general working conditions are good.

Educational requirements for entry-level AT is the completion of a master's degree in art therapy.[16] Master's degree programs require that applicants submit a portfolio of art to demonstrate proficiency in different forms of art media. To become a **registered art therapist (ATR)** requires completion of a supervised clinical experience after completing the master's degree. ATRs can become board certified, **Art Therapist Registered-Board Certified (ATR-BC)**, with successful completion of an exam administered by the **Arts Therapy Credentials Board (ARCB)**.

Dance Therapists

Dance therapy got its start in the United States in the 1940s as a way to treat psychosis, anxiety, and depression in traumatized World War II veterans before the availability of psychiatric medications. Today, **dance movement therapy (DMT)** is used to treat both mental and physical disabilities associated with trauma and aging. DMT has recently had an upswing in popularity as a career among college students.[18] The **American Dance Therapy Association** defines dance/movement therapy as the "psychotherapeutic use of movement to further the emotional, cognitive, physical, and social integration of the individual."[19] DMT is used with individuals, couples, families, and groups for those with developmental, social, physical, and psychological impairment (**FIGURE 30.5**).

FIGURE 30.5 Dance therapy is a tool for physical and emotional integration.

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Dance therapists practice in a variety of settings with individuals of all ages and abilities in mental health centers, psychiatric hospitals, developmental centers, day care centers, correctional facilities, and nursing homes as well as health promotion programs and private practice.[19]

DMT provides an avenue to communicate through movement for those with cognitive or neurological disorders unable to communicate verbally. For example, individuals who have had a traumatic brain injury or those with Parkinson's disease are able to communicate with others through movement and thus reduce feelings of isolation. DMT improves physical mobility by enhancing coordination and gait; DMT also improves cognitive function by reconfiguring neural pathways in the brain.[20] For the treatment of mental or emotional disorders, dance therapists use body posture and movement to evaluate patients who have experienced physical or psychological trauma. Anxiety and depression associated with trauma are reduced through the expansion of movement vocabulary.[18]

DMT assess their clients' emotional and social behavior, movement capabilities, and general posture. They 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.

Entry-level positions in DMT require a master's degree, including an internship. Although each program has different requirements, a bachelor's level degree in either dance or psychology is encouraged. In addition, applicants are required to have dance experience with a proficiency in at least one dance form plus a background in dance education, choreography, or improvisation. Some programs require an audition or a video for faculty to evaluate how prospective students express themselves and communicate through movement. After successful completion of the master's degree and internship, students are eligible to become a **Registered Dance/Movement Therapist (R-DMT)**. The credential required to provide supervision and training and to work independently in private practice is certification as a **Board-Certified Dance/Movement Therapist (BC-DMT)**. Movement research is the only real area of specialization of DMT. 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 to become a **Certified Movement Analyst (CMA)**.

Hours and other working conditions vary, as do 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 dance therapy 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.

Music Therapists

Music therapy began as a profession after World War I and World War II when musicians volunteered to perform at VA hospitals for veterans suffering from service-related physical and emotional trauma. The positive response of the veterans to music led to hospitals hiring musicians and by the 1940s a formal training for music therapy emerged.[21]

Music therapists find employment in a variety of facilities throughout 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 service agencies, and other related facilities.

Music therapists understand music psychology and specialize in using music to accomplish treatment goals involving 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 a new understanding of themselves and of the world around them. This new understanding can serve as a basis for improved mental health and more effective adjustment to normal living.

Often working as one member of a team that may include other therapists, psychiatrists, psychologists, social workers, and special educators, music therapists evaluate 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. Music therapists treat patients of all ages, ranging from disturbed small children and adolescents to adults who suffer from mental illnesses of many types and various degrees of seriousness. The developmentally disabled, those with cerebral palsy, individuals with physical impairments, and the blind make up a group that is second only to the mentally ill in the number 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 vocal music are often combined with body movements as a part of therapy.

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 problems. 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.

Music therapists usually enter this career field for the stimulation of 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.

There are different options to becoming a certified music therapist; however, the minimum requirements are a bachelor's degree in music therapy or in music plus a certification program in music therapy or a master's degree in music therapy. The bachelor's degree in music therapy includes 1,200 hours of clinical training including a supervised internship. Application to a music therapy program requires an audition to evaluate music competency. Students who complete degree requirements are eligible to become board certified by successfully completing the national board certification exam and to use the title, **Music Therapist-Board Certified (MT-BC)**.[22]

ADDITIONAL INFORMATION

For information and materials on careers and academic programs in massage therapy, contact:

- American Dental Association. ExploreHealthCareers.org. Internet: http://explorehealthcareers.org/en/home
- Associated Bodywork & Massage Professionals. 25188 Genesee Trail Road, Suite 200, Golden, CO 60401. Internet: http://www.abmp.com/home/
- American Massage Therapy Association, 600 Davis Street, Suite 900, Evanston, IL 60201. Internet: https://www.amtamassage.org/index.html

For more information on national testing and national certification for massage therapists, visit:

- Federation of State Massage Therapy Boards, 10801 Mastin Blvd, Suite 420, Overland Park, KS 66210. Internet: https://www.fsmtb.org/
- National Certification Board for Therapeutic Massage & Bodywork, 1333 Burr Ridge Parkway, Suite 200, Burr Ridge, IL 60527. Internet: http://www.ncbtmb.org/

For information on license requirements by state, visit:

- Massage License Requirements by State. Massage Register. Internet: http://www.massageregister.com/massage-license-requirements

For information and materials on careers and academic programs in recreational therapy, contact:

- American Therapeutic Recreation Association, 629 N. Main St., Hattiesburg, MS 39401. Internet: https://www.atra-online.com/
- Commission on Accreditation of Allied Health Education Programs, 1361 Park Street, Clearwater, FL 33756. Internet: www.caahep.org/
- National Therapeutic Recreation Society, 22377 Belmont Ridge Rd., Ashburn, VA 20148-4501. Internet: http://www.nrpa.org/

Information on certification of RTs may be obtained from

- National Council for Therapeutic Recreation Certification, 7 Elmwood Dr., New City, NY 10956. Internet: http://www.nctrc.org

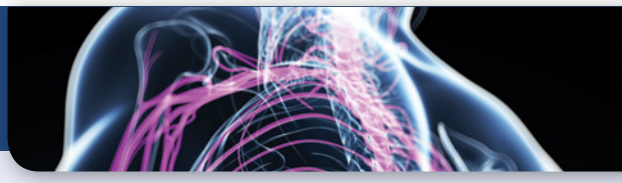
For information on licensure requirements, contact the appropriate recreational therapy regulatory agency for your state.

For career information on art, dance, and music therapy, visit:

- American Art Therapy Association (AATA), 4875 Eisenhower Avenue, Suite 240, Alexandria, VA 22304 Internet: http://www.arttherapy.org/
- American Dance Therapy Association, 10632 Little Patuxent Parkway, Suite 108, Columbia, MD 21044-3263. Internet: http://www.adta.org
- American Music Therapy Association, Inc., 8455 Colesville Road, Suite 1000, Silver Spring, MD 20910. Internet: http://www.musictherapy.org

- Art Therapy Credentials Board (ATCR), 7 Terrace Way, Greensboro, NC. Internet: http://www.atcb.org/
- National Coalition of Creative Arts Therapy Associations, c/o AMTA, 8455 Colesville Road, Suite 1000, Silver Spring, MD 20910. Internet: http://www.nccata.org
- The Certification Board for Music Therapists. 906 E. Lancaster Avenue, Suite 102, Downington, PA 19335. Internet: http://www.nccata.org

LEARNING PORTFOLIO



Issues for Discussion

1. Learn how to become board certified as a massage therapist by viewing the YouTube video, *Board Certification vs Licensure: What's the Difference?* From the National Certification Board for Therapeutic Massage & Bodywork (Internet: https://www.youtube.com/watch? t=25&-v=5Fe-r2nxwqA). Discuss the differences between licensure and certification for massage therapists. What are the advantages for a massage therapist to become certified?
2. Review the YouTube video, *Therapeutic Recreation: Who We Are, What We Do*, produced by the Therapeutic Recreation Association of Atlantic Canada (Internet: https://www.youtube.com/watch?v=yRmH-nFEzoV0). Using examples from the video, describe different work settings for RTs and differences between recreation and therapeutic recreation.
3. Discuss the similarities and differences between recreation therapy, art therapy, dance therapy, and music therapy in terms of the typical patient or client. What do academic programs in art, dance, and music therapy require that are not required for a degree in recreation therapy?
4. Learn more about music therapy and settings in which music therapy is used as part of a treatment program by viewing the YouTube video, *The Healing Power of Music* (Internet: https://www.youtube.com/watch?v=Ketz-mJ-x-Q). What are some of the ages and health conditions of those receiving music therapy?

Enrichment Activities

1. Learn more about being a massage therapist by viewing a video from the U.S. Department of Labor. CareerOneStop. Career Videos: *Massage Therapy*. Internet: http://www.careerinfonet.org/occ_rep_vidpopup.asp?soccode=319011&matchVideo=31-9011.00
2. Learn more about the work settings of a recreational therapist by viewing a video from the U.S. Department of Labor. CareerOneStop. Career Videos: *Recreation Therapy*. Internet: http://www.careerinfonet.org/occ_rep_vidpopup.asp?soccode=291125&matchVideo=29-1125.00
3. Learn how recreation therapy and art therapy were used in the rehabilitation of a young woman after a spinal cord injury. *Spinal Cord Injury: Michele Lee's Story*. Rehabilitation Institute of Chicago (RIC). Internet: http://www.ric.org/about/ric-patient-stories/spinal-cord-injury-michele-lees-story/
4. Read profiles of dance/movement therapists to learn how movement and psychotherapy are combined in a career. American Dance Therapy Association. *Profiles of Dance/Movement Therapists.* Internet: http://www.adta.org/Profiles_of_DMTs
5. Watch the movie, *Alive Inside,* that demonstrates how the use of iPods with recordings of favorite music of nursing home residents impacted their lives. Internet: http://www.aliveinside.us/#land

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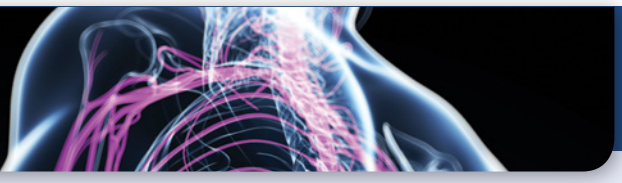

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CHAPTER 31

Health Information Personnel*

Key Terms

Assessment
Cancer registrar
Clinical documentation improvement (CDI) specialist
Coder
Diagnosis and treatment plan
Diagnosis-related groups (DRG)
DRG validator
Documentation
Electronic health records (EHR)
Electronic health record support specialist
Health data analyst
Health informatics
Health information administrator
Health information management (HIM)
Health information personnel
Health information technician
Health record
Insurance claims
Medical or health science librarian
Medical transcriptionists
Medicare reimbursement
Privacy officer
Quality improvement analyst
Statistics
Symptoms and response

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016.

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**.

HEALTH INFORMATION MANAGEMENT

Significant Points

- Employment is expected to grow much faster than average.
- Job prospects should be very good, particularly for technicians with strong computer software skills.
- Entrants usually have an associate's degree for a technician role and a bachelor's degree for an administrator role.
- This is one of the few health-related occupations in which there is no direct hands-on patient care.

Health information management professionals work to acquire, analyze, and protect digital and traditional health information that is considered vital to the delivery of quality patient care.[1] Health information management, or HIM, is at the heart of health care, because health records and health information systems serve as the backbone of healthcare systems, hospitals, clinics, and healthcare provider offices. 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 by multiple names, but is most commonly known as the patient's **health record** or chart. It includes the patient's medical history, results of physical examinations, results of X-ray and laboratory tests, diagnoses, treatment plans, doctors' orders and notes, and nurses' notes.[2]

The health record is the centerpiece of the health information system because it contains the entire history of each patient who receives health care. This health record—a permanent document of the history and progress of one person's illness or injury—preserves information of medical, scientific, legal, and planning value. The health record shows the **diagnosis and treatment plan** and the patient's **symptoms and response** to treatment. It is compiled from observations and findings recorded by the patient's physician and other professional members of the medical team. An example of healthcare professionals viewing a traditional (paper) health record is seen in FIGURE 31.1. The entries and reports noted in it originate from various points in the hospital, clinic, nursing home, health center, or other healthcare facility. Through a network of communications systems, they are entered in the individual patient's health record. This vital medical profile constitutes each patient's unique medical history.

Although accurate and orderly records are essential for clinical purposes, health 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. Health 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.

FIGURE 31.1 Healthcare professionals viewing a traditional paper record.

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FIGURE 31.2 Electronic health record.
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The increasing use of **electronic health records (EHRs)** continues to broaden and alter the job responsibilities of health information management professionals. For example, HIM professionals must be familiar with EHR computer software, maintaining EHR security, and analyzing electronic data to improve healthcare information. HIM professionals use EHR software to maintain data on patient safety, patterns of disease, disease treatment and outcomes, and to conduct clinical research. HIM professionals also may assist with improving EHR software usability and may contribute to the development and maintenance of health information networks. An example of an electronic health record is seen in **FIGURE 31.2**.

HEALTH INFORMATION ADMINISTRATORS

Work Description

Traditionally, **health information administrators** directed and controlled the activities of the health information department. While some continue to do so today, many others often work in a variety of different settings, possessing an array of different job titles. They possess skills in health data management, information policy, information systems, and administrative and clinical work flow. They train and supervise the health information staff and develop systems for documenting, storing, and retrieving health information. They manage the workflow for capturing data in a variety of healthcare settings, from large hospital systems to small physician practices. They organize, maintain, and disclose content considered part of the patient's health record in accordance with healthcare requirements, professional practice standards, and numerous state and federal regulations. Health information administrators compile **statistics** required by federal and state agencies, assist the medical staff in evaluations of patient care or research studies, and sometimes testify in court about patient health records and procedures of record keeping.

Health information administrators are focused on operations management, specifically working to ensure an accurate and complete health record and cost-effective information processing. The deployment of health information technology and EHRs by the majority of healthcare providers has influenced the skills needed by a health information administrator. As a result, health information managers must possess skills and training with regard to evolving information technology and specialized software technology, analysis of electronic data, disclosure of electronic health information, and current and proposed laws about health information systems. In addition, because patient data is central to quality management and medical research, health information managers ensure that databases are complete, accurate, and available only to authorized personnel.

Health information managers are responsible for the maintenance and security of all patient records. Recent regulations enacted by the federal government require that all healthcare providers maintain secure electronic patient records. They ensure confidentiality and security of patient information and protect patients' health information from unauthorized access and use. Health information administrators work with a team to employ security measures, such as authentication and permission protocols, encryption, and damage prevention techniques. They address breaches of protected health information, whether those breaches occur because of identity theft, unauthorized access to data, or theft or loss of laptop computers and mobile devices. They ensure that notification to patients of breaches of protected health information is completed according to standards and regulations. An example of the many terms a health information administrator must understand with regard to a data breach is seen in **FIGURE 31.3**.

Health information administrators are viewed as key members of the management team, and they work closely with the finance department to monitor revenue cycle and hospital spending patterns. As part of the management team, health administrators establish and implement policies, objectives, and procedures for the protection and security

FIGURE 31.3 Word cloud illustrating the concepts involved in a data breach.
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Professional Profiles

Name: Amanda, MHI, RHIA
Title: ICD-10 Implementation Team Leader
Education: BS in Health Informatics and Information Management; MS in Health Informatics (MHI)

Q: Tell us about your job and the type of organization you work in.

A: I am currently working at a large non profit medical center with a cardiology department ranking in the top 50 in the United States. It is an urban facility located in the middle of a large city. I am on the ICD-10 implementation team working with the order validation team to ensure the standards for the ICD-10 codes received are correct. I also provide training and guidance for the order validation team. I also have been working with DRG Denial Review Appeal letters. I write appeal letters and send them to insurance companies and provide appropriate documents to support our coding and findings.

Q: Describe a typical work day.

A: My typical work week is split between two different locations that my facility operates. I work in their electronic health record on a daily basis to look at orders and to pull information for denial letters. I do not have any patient interaction in this position.

Q: Why did you choose this profession?

A: I chose this profession because I believe in it. I chose this profession because what health information management (HIM) professionals do is a vital step in patient care. The data that is collected and used in the HIM Department can be used in so many ways to enhance patient quality of care. Health informatics and information management is cutting edge, and it combines health care, technology, and clinical care all in one profession.

Q: What do you like most about this profession and what challenges you?

A: I love how HIM is always changing. You are constantly learning something new. A new puzzle presents itself every day, and you have the knowledge to solve it. I love to learn, and this profession allows me to learn every day.

Q: Is there room for advancement in this field?

A: The room for advancement is never ending! With a degree in HIM you can find your niche in so many different venues of health care. It opens so many doors. It is overwhelming the amount of opportunity that comes with this profession. Since health care is moving into the realm of technology, there are even more positions available. Technology just opened a new door of health informatics and data-driven decision making now that facilities have that capability.

Q: What kind of academic training is required in this field and how long does it take?

A: At my alma mater, we did a lot of academic training. I learned ICD-10 coding and took three database technology classes. These classes were geared towards using database query tools to gather information to enhance patient care. We also covered healthcare law, research, and statistics. We also learned EHR infrastructure and used a real EHR to follow a patient through admission to discharge. The coursework that I went through was extensive, but it prepared me for every aspect of the HIM department in a large hospital facility.

Q: Name and explain what part of your academic training most prepared you for this profession.

A: What most prepared me for my experiences in my job were the relationships and the things I learned from my professors. I learned a lot in all of our courses, but the lessons that they taught me on a day-to-day basis are invaluable in my career today.

Q: Did you face obstacles in pursuing your goals and if so, describe them and how you overcame them?

A: I think every new graduate will face obstacles in getting their foot in the door, but it is all about networking. I had the once-in-a-lifetime opportunity to work with the AHIMA (American Health Information Management Association) Board of Directors and staff. I ensured that I soaked up everything I heard from them at every meeting and convention I went to. Learning from the subject matter experts in a field that means so much to you is a great way to get over the obstacles you face as a new graduate. It also

gives you the opportunity to network with the best in the business, and always gives you an opportunity to learn. So getting involved at your state level and of course volunteering at the national level is a great way to get started and to learn.

Q: What do you wish you had known in high school/college about pursuing this career?

A: I wish I would have known more about it! I feel like HIM is the best-kept secret. It really can open so many doors in health care, and can take your career in so many different directions. I wish that this profession was given more recognition.

Q: What advice would you give someone who is considering this career?

A: Do your research. If you know you want to work in health care, but you aren't sure which avenue to go into really consider an undergraduate degree in HIM. Having an undergraduate degree in HIM can lead you to many different opportunities to continue your education at the master's level and the doctoral level. Since I found my love in data and data-driven decision making, I got my master's degree in informatics.

of health information; evaluate personnel and work performance; develop reports and budgets; and coordinate activities with other managers.

This teamwork approach extends to the interaction between the health information administrator and clinical staff. Some health information administrators work as **clinical documentation improvement (CDI) specialists** and are responsible for review of the patient's electronic health record and serve as the liaison to the clinical treatment team in documenting clinical care. The CDI specialist works to obtain appropriate clinical documentation to ensure that the level of service rendered to the patient and the clinical complexity of the patient's condition are completely and accurately documented. The CDI specialist identifies gaps in clinical documentation and ensures that the severity of the patient's illness, the intensity of services, and the risk of mortality are appropriately reflected in the health record.

Some health information administrators specialize in protecting the confidentiality of health information, serving as privacy officers. A **privacy officer** develops and implements requisite privacy policies and procedures, receives complaints, and disseminates information about an entity's privacy practices. A privacy officer must have knowledge of numerous federal laws and regulations and industry and institutional standards governing the protection of patient health information. They provide extensive compliance training to physicians, associates, and board members and investigate reported privacy concerns.

Other health information administrators specialize as **health data analysts**. They work to acquire, manage, analyze, interpret, and transform data into accurate, consistent, and timely information. They focus on a variety of data points, calculate numerous rates, trend public health data, and measure costs. They balance the big picture strategic vision with day-to-day details of patient care.

Other health information administrators pursue the path of health informatics. **Health informatics** refers to the science of how health information is technically captured, transmitted, and utilized. Often the focus of education at the graduate level, health informatics addresses information systems, informatics principles, and information technology as applied to the continuum of healthcare delivery. Health informatics professionals work to develop more efficient, effective, and intuitive ways of controlling stored health information, managing clinical workflow tasks, and improving the general security of health information. For example, they work to create an EHR system that contains health history information according to a standardized fashion, whether from a traditional paper form or through direct data entry. An example of a traditional health history form is seen in FIGURE 31.4. By focusing on health information technology, these professionals strive to improve healthcare quality and efficiency, thereby resulting in lower costs and greater accessibility.

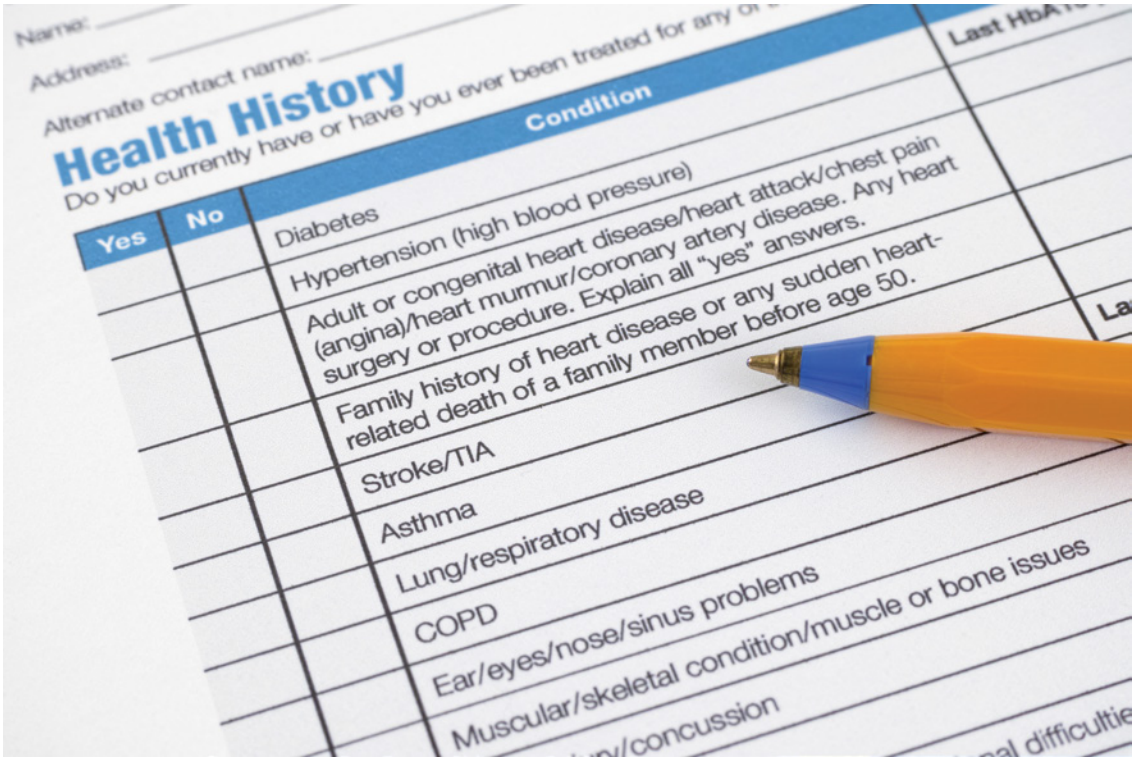

FIGURE 31.4 Traditional health history form.

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Work Environment

Most health information administrators work in pleasant and comfortable offices or on hospital patient floors, but they may work long hours if they are called in to help solve unexpected problems. 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. Those who work at computers for prolonged periods may experience muscle pain and eyestrain.

Employment Opportunities

Employment of medical and health services managers is expected to grow 17% from 2014 to 2024, faster than the average for all occupations. The healthcare industry as a whole is expected to see an increase in demand because of the aging population and the fact that people stay more active in life longer. Managers will be needed to manage and organize health information, oversee the computerization of patient records, and ensure their security as required by law. Additional demand for managers will stem from the need to recruit workers and increase employee retention, to comply with changing regulations, and to implement new technology. Hospitals will continue to employ the majority of medical and health services managers; however, the number of new jobs created in hospitals is expected to increase at a slower rate than in many other industries because of the growing use of clinics and other outpatient care sites. Employment will grow fastest in practitioners' offices, ambulatory care centers, home healthcare agencies, and consulting firms.

Educational and Legal Requirements

The minimum educational program for a registered health information administrator is a bachelor's degree in health information administration. In 2016, there were 59 accredited bachelor's degree programs, 4 master's degree programs in informatics, and 5 master's degree programs in health information management, according to the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM).[3] The pre-professional curriculum includes studies in the humanities and behavioral, biological, and physical sciences. The professional curriculum covers leadership, regulatory compliance, data content, structures and standards, informatics, analytics, data use, information protection, revenue management, medical terminology, medical care organizations, disease classification systems, organization, supervision, healthcare statistics, and principles of law.

Certification and Other Qualifications

Health information managers who hold a bachelor's degree or post-baccalaureate degree from an approved program and who pass an exam can earn certification as a Registered Health Information Administrator (RHIA) from the American Health Information Management Association (AHIMA).[4] AHIMA offers additional credentials to those health information administrators who specialize, including the Certified Document Improvement Practitioner (CDIP) credential, the Certified Health Data Analyst credential (CHDA), the Certified in Healthcare Privacy and Security (CHPS) credential, or the Certified Healthcare Technology Specialist (CHTS) credential.[5]

Health information administrators need good interpersonal skills so that they can communicate effectively when discussing patient information, discrepancies, and data requirements with the healthcare team. They need strong analytical skills, must be detail oriented, and be able to adapt to new laws and regulations governing health care. Because they work to protect confidential patient information, health information administrators must possess integrity.

Earnings

Earnings of health information administrators vary by type and size of the facility as well as by the level of education and responsibility. Salaries also vary according to geographic region. According to the latest statistics available in 2014 from the American Health Information Management Association, mean annual earnings for health information administrators for those with a bachelor's degree were $73,077, and for those with a master's degree they were $90,757.

Related Occupations

Health information administrators receive training and experience in both health sciences and management. Other occupations and services requiring knowledge of both fields include hospital and nursing home administrators, public health directors, health agency directors, clinical laboratory workers, nursing services, physical therapists, rehabilitation services, radiology, respiratory therapists, 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 Ave., 21st Floor, Chicago, IL 60601-5800. Internet: http://www.ahima.org

HEALTH INFORMATION TECHNICIANS

Work Description

Every time a patient receives health care, a record is maintained of the observations, medical or surgical interventions, and treatment outcomes. This record includes information that the patient provides concerning his or her symptoms and medical history, the results of examinations, results of X-rays and laboratory tests, diagnoses, and treatment plans. **Health information technicians** organize and evaluate these records and the data contained within them for timeliness, completeness, accuracy, appropriateness, and compliance. They organize and manage health information and data using various applications and databases and track patient outcomes for quality assessment. They ensure health record and data quality, accuracy, accessibility, and security in both paper and electronic systems. They organize, maintain, and disclose content considered part of the patient's electronic health record in accordance with healthcare requirements, professional practice standards, and numerous state and federal regulations. They ensure confidentiality and security of patient information and protect patients' health information from unauthorized access and use. They regularly interact with physicians and other healthcare professionals to maintain complete and accurate health information and records.[6]

Technicians regularly use software tools to electronically record data for collection, storage, analysis, retrieval, and reporting. They organize, maintain, and report data for clinical databases and registries. These efforts serve to improve patient care, contain costs, and provide documentation for use in legal actions or research studies.

Some health information technicians use various classification systems to code, categorize, and report patient information for insurance reimbursement purposes, for databases and registries, and to maintain patients' medical and treatment histories. These technicians are often referred to as **coders**. Coders use classification software to assign clinical codes to each diagnosis and procedure, relying on their knowledge of disease processes and multiple classification systems, such as the Current Procedural Terminology (CPT) and the International Statistical Classification of Diseases and Related Health Problems, 10th edition, or ICD-10 for short. In turn, coders use classification systems software to assign the patient to one of several hundred **diagnosis-related groups (DRGs)**. The DRG determines the amount for which Medicare or other insurance programs using the DRG system will reimburse the healthcare provider if the patient is covered. In addition to the DRG system, coders use other coding systems, such as those required for ambulatory settings, physician offices, or long-term care. Some coders advance to the position of **DRG validator**, where they perform quality review of records and data coded by the coding staff. The DRG validators effectively use abstracting databases, internal and external audit results, Quality Improvement Organization reports, and revenue cycle edit/denial information to perform their jobs.

Some health information technicians specialize as **quality improvement analysts**. In that role, they analyze, review, forecast, trend, and present information directed at improving the quality of patient care. They use analytical and statistical methodologies and techniques to measure trends, progress, or change in the delivery of patient care. They focus on patient safety, patient outcomes, patient satisfaction, utilization management, and cost and functional outcomes.

Some technicians specialize as **cancer registrars**. These individuals maintain a hospital-based registry of cancer patients. They review patient records and abstract data from inpatient and outpatient records, death certificates, pathology reports, and autopsy reports. They assist the hospital with its cancer program and compliance with regulatory requirements.

Another specialization for health information technicians is to work as an **electronic health record support specialist**. These specialists provide ongoing end-user support, maintenance, training, and customization of the EHR. They develop and maintain EHR documentation and system-related workflow processes. They may create templates and train physicians and members of the healthcare team on how to use EHR systems. They may configure software to meet the needs of clinicians.

Health information technicians' duties vary according to the size and needs of the facility. In large to medium facilities, technicians may specialize in one aspect of health information, supervise health information clerks and transcribers, or work with revenue cycle managers or information technology staff. In small facilities, a registered health information technician sometimes manages the department.

Work Environment

Health information personnel generally work a standard 40-hour week. Some overtime may be required. In hospitals where health information management departments are open 18 to 24 hours a day, seven days a week, health information management 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. Health information technicians whose use computer monitors for prolonged periods may experience eyestrain and musculoskeletal pain.

Employment Opportunities

Health information technicians held about 188,600 jobs in 2014. About one out of three jobs were in hospitals. The rest were mostly in offices of physicians, nursing care facilities, outpatient care centers, and home healthcare services.

Insurance firms that deal in health matters employ health information technicians to tabulate and analyze health information. Public health departments also employ technicians to supervise data collection from healthcare institutions and to assist in research.

Educational and Legal Requirements

Health information technicians entering the field usually have a two-year associate's degree from a community or junior college. Associate's degree coursework includes classes in medical terminology and diseases, anatomy and physiology, legal aspects of health information management, coding and classification systems, statistics, databases, quality assurance methods, and information technology systems, 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.

Experienced health information technicians usually advance in one of two ways—by specializing or by managing. Many senior health information technicians specialize in cancer registry, EHR support positions, quality improvement analyst positions, or coding, particularly Medicare coding, and may obtain voluntary certification.

Certification and Other Qualifications

Many employers favor technicians who have become Registered Health Information Technicians (RHIT). Registered Health Information Technicians must pass a written examination offered by the American Health Information Management Association (AHIMA).[7] To take the examination, a person must graduate from a two-year associate's degree program accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM). Technicians trained in non-CAHIIM-accredited programs or trained on the job are not eligible to take the examination. In 2016, there were about 268 CAHIIM-accredited programs in Health Information Management at the associate's degree level.[8]

Health information technicians who specialize as coders may become certified through several organizations. The American Health Information Management Association offers the Certified Coding Associate (CCA) credential for new coders who have graduated from a training program or spent at least six months coding and pass a comprehensive examination. AHIMA offers the Certified Coding Specialist (CCS) credential for those who graduated from a more comprehensive training program, possess two years' experience in the field, or possess the CCA credential and have one year of professional coding experience and pass a comprehensive examination.[9] The American Association of Professional Coders (AAPC) offers the Certified Coding Professional credential.[10] This credential is available to persons with two years' experience in the field who pass a certification examination. AAPC recommends but does not require candidates to graduate from an associate's degree program in medical cording or health information management. The Professional Association of Healthcare Coding Specialists (PAHCS) offers the Certified Medical Coding Specialist (CMCS) credential.[11] This credential can be earned by a graduate of a medical coding program or by someone who possesses a minimum of two years' experience.

Some health information technicians who specialize in cancer registry can become a Certified Tumor Registrar (CTR). The certification is offered by the National Cancer Registrars Association and requires completion of an examination with a passing score and maintenance of continuing education credits.[12]

Health information technicians need good interpersonal skills so that they can communicate well when discussing patient information, discrepancies, and data requirements with the healthcare team. They need strong analytical skills and must be detail oriented. Because they work to protect confidential patient information, health information technicians must possess integrity.

Employment Trends

Employment of health information technicians is expected to increase by 15%, much faster than the average for all occupations through 2024. Employment growth will result from the increase in the number of medical tests, treatments, and procedures that will be performed. As the population continues to age, the occurrence of health-related problems will increase. Cancer registrars should experience job growth as the incidence of cancer increases from an aging population. In addition, with the prevalence of electronic health records, more technicians will be needed to meet the responsibilities associated with electronic data management.

Job Prospects

New jobs are expected in offices of physicians because of increasing use of electronic health records and demand for detailed data to support reimbursement. New jobs also are expected in home healthcare services, outpatient care centers, and nursing and residential care facilities. Although employment growth in hospitals will not keep pace with growth in other healthcare industries, many new jobs will, nevertheless, be created. Cancer registrars should experience job growth. As the population continues to age, the incidence of cancer may increase. **TABLE 31.1** shows some projection data provided by the U.S. Department of Labor.

TABLE 31.1 Projections Data for Health Information Technicians, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Health information technician	188,600	217,600	29,000	15%

Earnings

According to information from 2014, median annual earnings of health information technicians were $35,900. The middle 50% earned between $28,250 and $46,640 per year. The lowest 10% earned less than $23,340, and the highest 10% earned more than $59,160 per year. Median annual earnings in the industries employing the largest number of health information technicians are shown in TABLE 31.2. According to the latest statistics available in 2014 from the American Health Information Management Association, mean annual earnings for health information technicians for those with an associate's degree were $55,589.

Related Occupations

Health information technicians need strong clinical background knowledge to analyze the contents of medical records. Other occupations that require knowledge of medical terminology, anatomy, and physiology, but do not interact directly with patients, are medical secretaries, transcriptionists, writers, and illustrators.

Additional Information

Information on careers in health information management and technology, including a list of accredited programs and certifications, is available from:

- American Health Information Management Association, 233 N. Michigan Ave., 21st Floor, Chicago, IL 60601-5800. Internet: http://www.ahima.org

For information about the medical coding profession and certifications, visit:

- American Health Information Management Association, 233 N. Michigan Ave., 21st Floor, Chicago, IL 60601-5800. Internet: http://www.ahima.org

TABLE 31.2 Median Annual Earnings in the Industries Employing the Largest Number of Health Information Technicians, May 2014

General medical and surgical hospitals	$41,250
Nursing care facilities	$37,670
Outpatient care centers	$36,680
Offices of physicians	$33,910

- American Association of Professional Coders, 2233 S. Presidents Dr., Salt Lake City, UT 84120. Internet: https:/www./aapc.com
- The Professional Association of Healthcare Coding Specialists, 218 E. Bearss Ave. Suite 354, Tampa FL 33613. Internet: http://www.pahcs.org

For information about the cancer registrar profession and certification, visit:

- National Cancer Registrars Association, 12030 Sunrise Valley Dr., Suite 400, Reston, VA 20191. Internet: http://ncra.org

MEDICAL TRANSCRIPTIONISTS

Significant Points

- Jobs are expected to decline by 3%.
- Training requirements involve postsecondary education.
- Most transcriptionists work full time.

Work Description

Medical transcriptionists translate and edit recorded dictation by physicians and other healthcare providers regarding patient assessment and treatment. They use headsets and transcribing machines to listen to recordings made by physicians and other healthcare professionals. They use word-processing software, specialized computer software such as speech recognition technology, and medical reference materials to accomplish their work. These workers transcribe a variety of medical reports, including those 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

dictating physician or care provider for review and signature, or correction. These reports eventually become a part of the patient's permanent file. An example of a medical transcriptionist listening to dictation and transcribing a report is seen in FIGURE 31.5.

Accuracy and confidentiality are important aspects of a medical transcriptionist's role. The need for accuracy is vital, because accurate information is important for improving patient safety and reducing the chance that a patient may receive an ineffective or even harmful treatment. Medical transcriptionists engage in quality assurance activities related to medical documentation and the security of that documentation. Medical transcriptionists must observe strict confidentiality requirements and only discuss patient confidential information with those medical personnel who are involved in treating the patient.

Medical transcriptionists must be familiar with electronic health record systems. They may need to enter reports, create templates, help develop documentation policies, and train physicians on how to use EHR systems. They may work with clinicians to improve documentation created by clinicians using features of EHR systems such as speech recognition software, drop-down menus, and templates.

Work Environment

The majority of medical transcriptionists are employed in comfortable settings. They usually work in hospitals, doctors' offices, or medical transcription services. An increasing number of medical transcriptionists work from home-based offices as subcontractors for hospitals and transcription services. In these settings, the medical transcriptionist receives dictation electronically, transcribes documents, and returns them quickly to their client for approval.

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. The pressure to be both accurate and fast also can prove stressful.

Most medical transcriptionists work a standard 40-hour week, although about one out of three works part time. A substantial number of medical transcriptionists are self employed, which may allow for irregular working hours.

Employment Opportunities

Medical transcriptionists held about 70,000 jobs in 2014. Employment of medical transcriptionists is projected to decline by 3% from 2014 to 2024,. A growing and aging population will spur demand for medical transcription services because older age groups receive proportionately greater numbers of medical tests, treatments, and procedures requiring documentation. The continuing need for electronic documentation that can be shared easily among providers, third-party payers, regulators, consumers, and health information systems will sustain a high level of demand for transcription services. Medical transcriptionists will be needed to amend patients' records, edit documents produced by speech recognition systems, and identify discrepancies in medical reports.

FIGURE 31.5 Woman transcribing dictation.

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Outsourcing of transcription work overseas and advancements in speech recognition technology are not expected to reduce the need for well-trained medical transcriptionists within the United States. Outsourcing transcription work abroad—to countries such as India, Pakistan, Philippines, and the Caribbean—has grown more popular as transmitting confidential health information over the Internet has become more secure; however, the demand for overseas transcription services is expected only to supplement the demand for well-trained domestic medical transcriptionists. In addition, reports transcribed by overseas medical transcription services usually require editing for accuracy by domestic medical transcriptionists before they meet U.S. quality standards. Concerns over patient confidentiality and data security suggest a continued need for transcriptionists within the United States. Speech recognition technology allows physicians and other health professionals to dictate medical reports into a computerized program that converts speech to text. In spite of advancements in this technology, speech recognition software has been slow to grasp and analyze the human voice and the English language, and the medical vernacular with all its diversity. As a result, there will continue to be a need for skilled medical transcriptionists to identify and appropriately edit the inevitable errors created by speech recognition systems, and to create a final document.

Job opportunities should be best for those who earn an associate's degree or certification from the Association for Healthcare Documentation Integrity (AHDI).

Education and Legal Requirements

Employers prefer to hire transcriptionists who have completed postsecondary training in medical transcription offered by many vocational schools, community colleges, and distance-learning programs.

Completion of a two-year associate's degree or one-year certificate program—including coursework in anatomy, medical terminology, legal issues relating to healthcare documentation, and English grammar and punctuation—is highly recommended, but not always required. Many of these programs include supervised on-the-job experience. Some transcriptionists, especially those already familiar with medical terminology from previous experience as a nurse or medical secretary, become proficient through refresher courses and training.

Formal accreditation is not required for medical transcription programs. However, the Approval Committee for Certificate Programs (ACCP)—established by the Association for Healthcare Documentation Integrity (AHDI) and the American Health Information Management Association—offers voluntary accreditation for medical transcription programs.[13] Although voluntary, completion of an ACCP-approved program may be required for transcriptionists seeking certification.

Certification and Other Qualifications

The AHDI awards two voluntary designations, the Registered Healthcare Documentation Specialist (RHDS) and the Certified Healthcare Documentation Specialist (CHDS).[14] Medical transcriptionists who are recent graduates of medical transcription educational programs or have fewer than two years' experience in acute care may become a RHDS. The RHDS credential is awarded upon successfully passing the AHDI level 1 registered medical transcription exam. The CHDS designation requires certification as an RHDS and at least two years of acute care experience working in multiple specialty areas using different format, report, and dictation types. Candidates also must earn a passing score on a certification examination. Because medicine is constantly evolving, medical transcriptionists are encouraged to update their skills regularly. RHDSs and CHDSs must earn continuing education credits every three years to be recertified. As in many other fields, certification is recognized as a sign of competence.

For those seeking work as medical transcriptionists, 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 healthcare professionals speak English as a second language. Time management skills are helpful because transcriptionists often work under short, tight deadlines.

Job Prospects

Those medical transcriptionists with formal education and experience working with electronic health records should encounter good job prospects. Opportunities for new transcriptions will arise from the retirement of existing transcriptionists who retire over the next decade. TABLE 31.3 shows projection data provided by the U.S. Department of Labor.

TABLE 31.3 Projections Data for Medical Transcriptionists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Medical transcriptionists	70,000	67,800	–2,200	–3%

TABLE 31.4 Median Hourly Earnings in the Industries Employing the Largest Numbers of Medical Transcriptionists, May 2014

Medical and diagnostic laboratories	$18.72
General medical and surgical hospitals	$18.20
Business support services	$15.48
Outpatient care centers	$17.34
Offices of physicians	$17.04

Earnings

Medical transcriptionists had median hourly wages of $16.71 in May 2014. The middle 50% earned between $13.45 and $20.36. The lowest 10% earned less than $10.68, and the highest 10% earned more than $23.70. Median hourly earnings in the industries employing the largest numbers of medical transcriptionists are detailed in TABLE 31.4.

Compensation methods for medical transcriptionists vary. Some are paid based on the number of hours worked or on the number of lines transcribed. Others receive a base pay per hour with incentives for extra production. Large hospitals and healthcare organizations usually prefer to pay for the time an employee works. Independent contractors and employees of transcription services usually 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, information clerks, and human resource clerks. Medical secretaries may also transcribe as part of their job. Other workers who provide medical support include medical assistants and health information technicians.

Additional Information

For information on a career as a medical transcriptionist, contact:

- Association for Healthcare Documentation Integrity, 4230 Kierman Ave., Suite 130, Modesto, CA 95356. Internet: http://www.ahdionline.org

MEDICAL LIBRARIANS

Significant Points

- Job prospects are expected to grow 2%, slower than the national average.
- Medical librarians require knowledge of both library science and health science.
- Salaries vary depending on individual qualifications and the type, size, and location of the library.

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 health and related fields are growing rapidly, professional staff need quick and efficient access to large volumes of information and materials to keep abreast of developments, new procedures and techniques, and other relevant data. Relevant information and materials are used in education and training programs, in exchange-of-information activities among different health professions, and in biomedical research. They may provide information about new clinical trials and medical treatments and procedures, teach medical students how to locate medical information, or answer consumers' health questions. Health science librarians make this information available to those who need it, utilizing knowledge of both library science and health science in their work.

Depending on the size of the facility where they work, health science librarians may take charge of an entire library or be assigned to 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 a bibliography or to provide a comprehensive review or summary on a particular subject.

Aside from assisting patrons in person, the medical librarian also responds to mail, e-mail, and 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, services offered by the medical library may depend on whether the hospital conducts research and training, or on the categories of illness treated there. Some hospitals have separate medical, nursing, and patient libraries. Increasingly, however, these collections are grouped together under the direction of one chief librarian, with assistants in charge of the separate services.

The medical librarian also plays an important role in the hospital's rehabilitation services. In addition, 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 and related 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. Some librarians have private offices, while others share space. In ill-equipped offices, librarians may risk eyestrain, backache, and carpal tunnel syndrome. Nevertheless, surroundings are usually pleasant and free of hazards or unusual environmental working conditions.

Employment Opportunities

Employment of librarians is expected to grow by 2% between 2014 and 2024, which is slower than the average for all occupations. Growth in the number of librarians will be limited by government budget constraints and the increasing use of electronic resources. Both will result in the hiring of fewer librarians and the replacement of librarians with less costly library technicians and assistants. As electronic resources become more common and patrons and support staff become more familiar with their use, fewer librarians are needed to maintain and assist users with these resources. In addition, many libraries are equipped for users to access library resources directly from their homes or offices through library websites. Some users bypass librarians altogether and conduct research on their own. Librarians will still be needed, however, to manage staff, help users define their research needs and develop database search techniques, address complicated reference requests, and choose appropriate materials.

Over the next decade, jobs for medical librarians outside traditional settings will grow fastest. These settings include private industry, nonprofit organizations, and consulting firms. Examples of jobs in industry for medical librarians include the biotechnology, insurance, pharmaceutical, publishing, and medical equipment industries.

Many companies are turning to librarians because of their research and organizational skills, and their knowledge of computer databases and library automation systems. Librarians also are hired by organizations to organize information on the Internet. Librarians working in these settings may be classified as systems analysts, database specialists and trainers, webmasters or web developers, or local area network (LAN) coordinators.

Most recently, medical and other librarians held about 143,100 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 government agencies. Entrepreneurial librarians sometimes start their own consulting practices, acting as freelance librarians or information brokers and providing services to other libraries, business, or government agencies. Replacement needs will account for more job openings over the next decade, as more than two out of three librarians are age 45 or older, which will result in many job openings as these librarians retire. Slower than average employment growth, coupled with an increasing number of graduates with master's degrees in library science (MLS), 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

A master of library science (MLS) degree 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.[15] Most MLS programs require a bachelor's degree; a major in liberal arts is appropriate preparation for such graduate work.

Most MLS programs take one year to complete, but some take two years. 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 in using such new resources as online reference systems, Internet search methods, and automated circulation systems. Computer-related coursework is an increasingly important component of an MLS degree.

A MLS degree provides general preparation for library work, but some individuals specialize in one particular area. The minimum qualifications for librarians specializing in medicine are as follows:

- A master's degree in 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. Most MLS schools offer courses in Health Sciences Information, which is recommended for those interested in becoming a medical librarian.

Certification and Other Qualifications

Certification as a medical librarian is offered through membership in the Academy of Health Information Professionals (AHIP), a subsidiary of the Medical Library Association.[16] Certification is based on three levels of achievement: academic preparation, professional work experience, and individual professional accomplishments. Depending on the level of work experience a medical librarian has, membership level differs: provisional for those with five years or less experience; Member or Senior for those with five or more years of experience; Distinguished for those with 10 years or more experience; and Emeritus for those who retire with a minimum of 10 consecutive years experience at the time of retirement. A point system addressing professional accomplishments corresponds with each level.

Because medical librarians interact with and must convey information to a wide variety of users, they must possess strong communication skills. Computer skills are a necessity, as new information, technology, and resources change what a medical librarian can do. Problem-solving skills are needed to conduct research, along with excellent reading skills.

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 wages of librarians in May 2014 were $56,170. The middle 50% earned between $44,230 and $70,590. The lowest 10% earned less than $33,680, and the highest 10% earned more than $87,060. The Medical Library Association reports that the average starting salary was $49,060 in 2012. The overall average salary for medical librarians in 2012 was $66,622. Library directors can earn from a low average of $52,293 up to a high average of $116,200 per year.[17]

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 communication skills include physicians, nurses, health educators, community health workers, allied healthcare professionals, administrators, and information technology programmers and specialists.

Additional Information

Information on librarianship, including information on scholarships or loans, is available from the American Library Association. Consult its website for a listing of accredited library education programs.

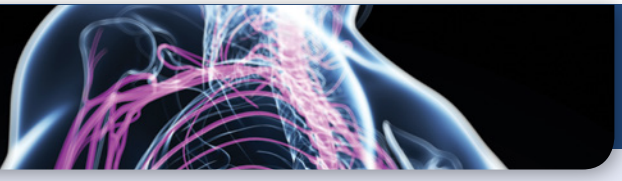
- American Library Association, Office for Human Resource Development and Recruitment, 50 East Huron St., Chicago, IL 60611. Internet: http://www.ala.org

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, 65 East Wacker Pl., Suite 1900, Chicago, IL 60601-7246. Internet: http://www.mlanet.org

For information about medical librarians in academic settings, contact

- Association of Academic Health Sciences Libraries (AAHSL), 2150 North 107th St., Suite 205, Seattle, WA 98133-9009. Internet: http://aahsl.org



LEARNING PORTFOLIO

Issues for Discussion

1. Imagine you are a patient who has entrusted your healthcare provider with your personal health information. Brainstorm with your classmates and instructor what problems may arise if that personal health information is not kept confidential as the law requires and you expect.
2. Unfortunately, data breaches have been in the news over recent years, ranging from those occurring at banks and department stores to government agencies. Discuss with your classmates whether any of you have been the victim or know a victim of a data breach. If so, describe what kind of breach was involved (e.g., bank data, credit cards, health information, etc.), what type of notice was received about the breach, and what remedies were offered as part of the notification.

Enrichment Activities

1. Visit the website: http://www.ahima.org/careers/healthinfo to hear health information management students and professionals speak about their career choice.
2. Visit the career map for health information management careers, found at http://hicareers.com/CareerMap/. Navigate the map to understand current and emerging careers, promotional paths, job descriptions, and salary information in this discipline.
3. Learn more about personal health records by visiting the website: http://www.myphr.com and learn how you can create your own personal health record. Choose one of the free offerings and create a personal health record for yourself or a loved one.
4. Learn about the career of a medical coder by viewing the videos at: http://www.careerstep.com/career-profile-medical-coding-billing-video?uid=pub140514 and https://www.youtube.com/watch?v=_0tbRAx2Xgc
5. Learn more about medical transcription as a career by viewing the video at http://www.careerstep.com/medical-transcription-video-tour
6. Visit the "HackLibrarySchool" blog at http://hacklibraryschool.com/2015/09/10/to-specialize-or-not-to-specialize/ and read interviews with four medical librarians and their take on specializing in library school.

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17. Medical Library Association. *Explore a Career in Health Science Information*. Internet: http://www.mlanet.org/page/explore-this-career

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CHAPTER 32

Medical and Nursing Assistants*

Key Terms

Administrative medical assistants
Clinical medical assistants
Medical assistants
Nursing assistants
Ophthalmic medical assistants
Optometric medical assistants
Orderlies
Podiatric medical assistants

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

MEDICAL ASSISTANTS

Significant Points

- Employment is projected to grow much faster than average, ranking medical assistants among the fastest-growing occupations over the 2014 to 2024 decade.
- Job prospects should be excellent.
- More than half of all medical assistants work in offices of physicians.
- Some medical assistants are trained on the job, but many complete one-year or two-year programs.

Work Descriptions

Medical assistants perform administrative and clinical tasks to keep the offices of physicians, podiatrists, chiropractors, and other health practitioners running smoothly. They should not be confused with physician assistants, who examine, diagnose, and treat patients under the direct supervision of a physician. Physician assistants are discussed in a separate chapter.

The duties of medical assistants vary from office to office, depending on the location and size of the practice and the practitioner's specialty. In small practices, medical assistants usually do many different kinds of tasks, handling both administrative and clinical duties and reporting directly to an office manager, physician, or other health practitioner. Those in large practices tend to specialize in a particular area, under the supervision of department administrators. Many physician offices have adopted electronic health records (EHRs), requiring medical assistants to understand the computer software their EHR uses. Medical assistants who handle patient records must observe strict confidentiality requirements and only discuss patient confidential information with those medical personnel who are involved in treating the patient.

Administrative medical assistants perform many duties. They update and file patients' health records, fill out insurance forms, and arrange for hospital admissions and laboratory services. They also perform tasks less specific to medical settings, such as answering telephones, greeting patients, scheduling appointments, and handling correspondence, billing, and bookkeeping.

For **clinical medical assistants**, duties vary according to what is allowed by state law. Some common tasks include taking medical histories and recording vital signs, explaining treatment procedures to patients, preparing patients for examinations, and assisting physicians during examinations. An example of a medical history is seen in FIGURE 32.1. Medical assistants collect and prepare laboratory specimens and sometimes perform basic laboratory tests on the premises, dispose of contaminated supplies, and sterilize medical instruments. An example of a blood draw that would be used for laboratory testing is seen in FIGURE 32.2. They might instruct patients about medications 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 electrocardiograms, remove sutures, and change dressings. Medical assistants also may arrange examining room instruments and equipment, purchase and maintain supplies and equipment, and keep waiting and examining rooms neat and clean.

FIGURE 32.1 Medical history questionnaire.
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Ophthalmic medical assistants, optometric assistants, and podiatric medical assistants are examples of specialized medical assistants who have additional duties. **Ophthalmic medical assistants** help ophthalmologists provide eye care. They conduct diagnostic tests, measure and record vision, and test eye muscle function. They also show patients how to insert, remove, and care for contact lenses, and they apply eye dressings. Under the direction of the physician, ophthalmic medical assistants may administer eye medications. They also maintain optical and surgical instruments and may assist the ophthalmologist in surgery. **Optometric assistants** also help provide eye care, working with optometrists. They provide chair side assistance, instruct patients about contact lens use and care, conduct preliminary tests on patients, and otherwise provide assistance while working directly with an optometrist. **Podiatric medical assistants** make castings of feet, expose and develop X-rays, and assist podiatrists in surgery.

FIGURE 32.2 Medical assistant drawing blood from patient.
© Orchidflower/Shutterstock

Professional Profiles

Name: Marin, COA, CPO
Title: Certified Ophthalmic Assistant (COA) and Certified Paraoptometric (CPO)

Q: Tell us about your job and the type of organization you work in.

A: I work in a private ophthalmology practice with four doctors, two specializing in "front of the eye" (cornea, cataracts, etc.) and two specializing in "back of the eye" (retina, diabetes, macular degeneration and other eye disease) There are 10 exam rooms for patients. On an average day we see about 50 patients.

Q: Describe a typical work day

A: On a typical day, I am working up patients (histories, chief complaints, refractions, and general exams) and getting them ready for the doctor. Between workups, I do special testing, such as retinal photography, optical coherence tomography (OCT), visual fields, or specular microscopy. Some patients wear contact lenses, so I am also the person to fit them in their lenses. In our office, we have a minor surgery suite where minor procedures and surgeries are performed. As a certified assistant, I can assist in those procedures as needed.

Q: Why did you choose this profession?

A: After "falling into" a job at an optometrist's office and later becoming certified as a paraoptometric, I chose to advance my career into ophthalmology.

Q: What do you like most about this profession?

A: What I like most about my job is the relationship I build with the patients. So many treat me like family. Working in a smaller private practice, I am able to get to know the patients and really focus on their individual needs. I love knowing that I am helping people every day, and being surrounded by staff that is just as happy to be there doing the same type of work. One other thing to note is, no two patients are the same. Every day brings a learning experience, and my knowledge of eyecare is continually expanding.

Q: Is there room for advancement in this field?

A: There is definitely room for advancement, continuing education, and further certification. I am currently studying for my COT (Certified Ophthalmic Technician), which will show that I have learned more skills that can be used to help the doctors.

Q: Name and explain what part of your academic training most prepared you for this profession.

A: The best training I had for my job was hands-on training in the workplace. Learning from doctors and senior technicians prepared me for the test to be certified. It also taught me how to interact with patients and how to be good at special tests.

Q: What do you wish you had known in high school/college about pursuing this career?

A: First of all, I wish I had known this career existed! When I started going to college, I had a different major every semester, it seemed. If I had known that I was going to find a job like the one I have, I would have stuck with my schooling and finished getting my degree. A bachelor's degree would give me many more opportunities to grow and advance in this field, and I could make more money.

Q: What advice would you give someone who is considering this career?

A: I would suggest to someone considering this career to call their local ophthalmologist or optometrist and ask about setting up a day to shadow as a student. I would definitely urge them to continue their education and finish their degree.

Work Environment

Medical assistants work in well-lit, clean environments. They constantly interact with other people and may have to handle several responsibilities at once. Most full-time medical assistants work a regular 40-hour week. Many medical assistants, however, work part time, evenings, or weekends to cover shifts in medical facilities that are always open.

Employment Opportunities

Medical assistants held about 591,300 jobs in 2014. More than half worked in offices of physicians; 15% worked in public and private hospitals, including inpatient and outpatient facilities; and 10% worked in offices of other health practitioners, such as chiropractors, optometrists, and podiatrists. Most of the remainder worked in other healthcare industries such as outpatient care centers, nursing and residential care facilities, and employment services.

Educational and Legal Requirements

Some medical assistants are trained on the job, but many complete one-year or two-year programs.

Education and Training

Postsecondary medical assisting programs are offered in vocational-technical high schools, postsecondary vocational schools, and community and junior colleges. Programs usually last either one year and result in a certificate or diploma, or two years and result in an associate's degree. 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, the administration of medications, and first aid. They study office practices, patient relations, medical law, and ethics. Medical assistants also learn how to code both paper and EHRs and how to record patient information. There are various organizations that accredit medical assisting programs. Accredited programs often include an internship that provides practical experience in physicians' offices, hospitals, or other healthcare facilities.

Formal training in medical assisting, while generally preferred, is not always required. Some medical assistants are trained on the job, although this practice is less common than in the past. Applicants usually need a high school diploma or the equivalent. Recommended high school courses include mathematics, health, biology, typing, bookkeeping, computers, and office skills. Volunteer experience in the healthcare field also is helpful. Medical assistants who are trained on the job usually spend their first few months attending training sessions and working closely with more experienced workers. Some states allow medical assistants to perform more advanced procedures, such as giving injections, after passing a test or taking a course.

Certification and Other Qualifications

Employers prefer to hire experienced or certified workers. Although not required, certification indicates that a medical assistant meets certain standards of competence. The certification process varies. There are various associations—some listed among the sources of information that follow—that award certification credentials to medical assistants. One credential is the Certified Medical Assistant (CMA). This credential allows the CMA to take medical histories, draw blood, perform basic laboratory tests, and remove sutures, among other duties.[1] Another credential is the Certified Clinical Medical Assistant (CCMA). This credential allows the CCMA to interview and educate patients, assist the physician with medical exams, measure and record vital signs, and administer injections. A medical assistant may choose to become certified in a specialty, such as podiatry, optometry, or ophthalmology.[2]

Medical assistants deal with the public; therefore, they must be neat, well groomed, and have a courteous, pleasant manner, and they must be able to put patients at ease and explain physicians' instructions. They must respect the confidential nature of medical information. They must be able to understand and follow health records and diagnoses and may be required to code a patient's medical record for billing purposes. Clinical duties require a reasonable level of manual dexterity and visual acuity in order to use basic clinical instruments.

Advancement

Medical assistants may advance to other occupations through experience or additional training. For example, some may go on to teach medical assisting, and others pursue additional education to become nurses or other healthcare workers. Administrative medical assistants may advance to office manager, or qualify for a variety of administrative support occupations.

Employment Trends

Employment is projected to grow much faster than average, ranking medical assistants among the fastest-growing occupations over the 2014 to 2024 decade. Job opportunities should be excellent, particularly for those with formal training or experience and certification.

Employment Change

Employment of medical assistants is expected to grow 23% from 2014 to 2024, much faster than the average for all occupations. As the healthcare industry expands because of technological advances in medicine and the growth and aging of

the population, an increased need for all healthcare workers will be felt. The increasing use of medical assistants in the rapidly growing healthcare industry will further stimulate job growth.

Helping to drive job growth is the increasing number of group practices, clinics, and other healthcare facilities that need a high proportion of support personnel, particularly medical assistants who can handle both administrative and clinical duties. As more and more physicians' practices switch to an EHR, medical assistants' job responsibilities will continue to change. Assistants will need to become familiar with EHR computer software, including maintaining EHR security and analyzing electronic data, to improve healthcare information. In addition, medical assistants work primarily in outpatient settings, a rapidly growing sector of the healthcare industry.

Job Prospects

Job seekers who want to work as medical assistants should encounter excellent job prospects. Medical assistants are projected to account for a very large number of new jobs, and many other opportunities will come from the need to replace workers leaving the occupation. Those with formal training or experience—particularly those with certification—should have the best job opportunities. TABLE 32.1 shows some projection data provided by the U.S. Department of Labor.

Earnings

The earnings of medical assistants vary, depending on experience, skill level, and location. Median annual earnings of wage and salary medical assistants were $29,960 in May 2014. The middle 50% earned between $25,500 and $36,070. The lowest 10% earned less than $21,540, and the highest 10% earned more than $42,760. Median annual earnings in the industries employing the largest numbers of medical assistants in May 2014 are shown in TABLE 32.2.

Related Occupations

Medical assistants perform work similar to the tasks completed by other workers in medical support occupations. Administrative medical assistants do work similar to that of medical secretaries, medical transcriptionists, and medical records and health information technicians. Clinical medical assistants perform duties similar to those of dental assistants; dental hygienists; occupational therapist assistants and aides; pharmacy aides; licensed practical and licensed vocational nurses; surgical technologists; physical therapist assistants and aides; and nursing, psychiatric, and home health aides.

TABLE 32.2 Median Annual Earnings in the Industries Employing the Largest Numbers of Medical Assistants, May 2014

General medical and surgical hospitals	$32,910
Colleges, universities, and professional schools	$34,720
Offices of physicians	$31,230
Outpatient care centers	$32,200
Offices of other health practitioners	$28,040

Additional Information

Information about career opportunities and certification for medical assistants is available from:

- American Association of Medical Assistants, 20 North Wacker Dr., Suite 1575, Chicago, IL 60606. Internet: http://www.aama-ntl.org
- American Medical Technologists, 10700 West Higgins Rd., Suite 150, Rosemont, IL 60018. Internet: http://www.americanmedtech.org /default.aspx
- National Healthcareer Association, 7 Ridgedale Ave., Suite 203, Cedar Knolls, NJ 07927. Internet: http://www.nhanow.com

For lists of accredited educational programs in medical assisting, contact:

- Accrediting Bureau of Health Education Schools, 7777 Leesburg Pike, Suite 314 N, Falls Church, VA 22043. Internet: http://www.abhes.org
- Commission on Accreditation of Allied Health Education Programs, 1361 Park St., Clearwater, FL 33756. Internet: http://www.caahep.org

Information about career opportunities, training programs, and certification for ophthalmic medical personnel is available from:

- Joint Commission on Allied Health Personnel in Ophthalmology, 2025 Woodlane Dr., St. Paul, MN 55125. Internet: http://www.jcahpo.org

TABLE 32.1 Projections Data for Medical Assistants, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Medical assistants	591,300	730,200	138,900	23%

Information about career opportunities, training programs, and certification for optometric assistants is available from:

- American Optometric Association, 243 N. Lindbergh Blvd., St. Louis, MO 63141. Internet: http://www.aoa.org

Information about certification for podiatric assistants is available from:

- American Society of Podiatric Medical Assistants, 2l24 South Austin Blvd., Cicero, IL 60804. Internet: http://www.aspma.org/

NURSING ASSISTANTS AND ORDERLIES

Significant Points

- Numerous job openings and excellent job opportunities are expected.
- Most jobs are in nursing and residential care facilities and in hospitals.
- A high school diploma is required for many jobs; specific qualifications vary by occupation, state laws, and work setting.
- This occupation is characterized by modest entry requirements, low pay, high physical and emotional demands, and limited advancement opportunities.

Work Description

Nursing assistants and orderlies help care for physically or mentally ill, injured, disabled, or infirm individuals in hospitals, nursing care facilities, and mental health settings. Nursing assistants and orderlies are among the occupations commonly referred to as direct care workers, due to their role in working with patients who need long-term care. The specific care they give depends on their specialty. Nursing assistants and orderlies work under the supervision of licensed practical nurses or registered nurses.

Nursing assistants, also known as nurse aides, certified nursing assistants, or geriatric aides, are trained professionals who support the nursing staff in hospitals, long-term care facilities, rehabilitation clinics, and doctor offices. Nursing assistants provide hands-on care and perform routine tasks under the supervision of nursing and medical staff. Specific tasks vary, with assistants handling many aspects of a patient's care. They often help patients to eat, dress, and bathe. They also answer calls for help, deliver messages, serve meals, make beds, and tidy up rooms. Assistants sometimes are responsible for taking a patient's temperature, pulse rate, respiration rate, or blood pressure. They also may help provide care to patients by helping them get out of bed and walk, escorting them to operating and examining rooms, or providing skin care. Some assistants help other medical staff by setting up equipment, storing and moving supplies, and assisting with some procedures. Assistants also observe patients' physical, mental, and emotional conditions and report any change to the nursing or medical staff. An example of a nursing assistant pushing a senior man in a wheelchair is seen in FIGURE 32.3.

Nursing assistants employed in nursing care facilities often are the principal caregivers and have more contact with residents than do other members of the staff. Because some residents may stay in a nursing care facility for months or even years, many assistants develop positive, caring relationships with their patients.

Orderlies, also known as hospital attendants or unlicensed assistive personnel, work in a hospital and are responsible for the nonmedical care of patients and the maintenance of order and cleanliness. Orderlies sometimes transport patients to wards, may assist housekeepers with changing bed linen, provide patients with meals, and clean equipment and wards. When they do assist patients, their duties often include helping patients with bathing and dressing or assisting patients out of bed. Often they

FIGURE 32.3 Nursing assistant pushing man in wheelchair.
© Monkey Business Images/Shutterstock

are assigned daily responsibilities based on the operational needs of the hospital, which means their duties may differ from day to day.

Work Environment

Work as an assistant or orderly can be physically demanding. Assistants and orderlies spend many hours standing and walking, and they often face heavy workloads. Nursing assistants and orderlies must guard against back injury, because they may have to move patients into and out of bed or help them stand or walk. It is important for nursing assistants and orderlies to be trained in and to follow the proper procedures for lifting and moving patients. Nursing assistants also may face hazards from minor infections and major diseases, such as hepatitis, but can avoid infections by following proper procedures. Nursing aides, orderlies, and attendants had some of the highest nonfatal injuries and illness rates for all occupations in 2013.

Nursing assistants and orderlies also perform tasks that some may consider unpleasant, such as emptying bedpans and changing soiled bed linens. The patients they care for may be disoriented, irritable, or uncooperative. Although their work can be emotionally demanding, many aides gain satisfaction from assisting those in need.

Most full-time nursing assistants and orderlies work about 40 hours per week, but because patients need care 24 hours a day, some work evenings, nights, weekends, and holidays. Most nursing assistants and orderlies work full time.

Employment Opportunities

Nursing assistants held about 1.5 million jobs in 2014. Orderlies held about 53,000 jobs in 2014. About 41% of nursing assistants and attendants worked in nursing care facilities and another 25% worked in hospitals. About 79% of orderlies worked in hospitals and another 11% worked in nursing care facilities. Others were employed in residential care facilities, government agencies, outpatient care centers, and individual and family services.

Educational and Legal Requirements

In many cases, a high school diploma or equivalent is necessary for a job as an orderly and a high school diploma plus specific training is necessary for a job as a nursing assistant. Specific qualifications vary by occupation, state laws, and work setting. Advancement opportunities are limited.

Education and Training

Nursing assistants must complete a state-approved education program and must pass their state's competency exam to become certified. Orderlies generally have at least a high school diploma and receive on-the-job training. Nursing assistant training is offered in high schools, vocational-technical centers, some nursing care facilities, and some community colleges. Basic nursing skills are taught and clinical work is supervised. Courses cover body mechanics, nutrition, anatomy and physiology, infection control, communication skills, and resident rights. Personal care skills, such as how to help patients bathe, eat, and groom themselves, also are taught. Hospitals may require previous experience as a nursing aide or home health aide.

Some employers provide classroom instruction for newly hired aides, while others rely exclusively on informal on-the-job instruction by a licensed nurse or an experienced aide. Such training may last from several days to a few months. Aides also may attend lectures, workshops, and in-service training.

Licensure and Certification

Federal government requirements exist for nursing assistants who work in nursing care facilities.[3] These assistants must complete a minimum of 75 hours of state-approved training and pass a competency evaluation. Aides who complete the program are known as certified nurse assistants (CNAs) and are placed on the state registry of nurse assistants. Nursing assistants must be on the state registry in order to work in nursing homes. Additional requirements may exist, such as for continuing education and a criminal background check, but vary by state. Therefore, individuals should contact their state board directly for applicable information.

Some state-approved training programs allow nursing assistants to earn additional credentials. One such credential is the Certified Medication Assistant (CMA). This credential allows the CMA to give patients medications. Some states permit nursing assistants to become certified in specialized areas, such as geriatrics.

Orderlies do not require a license. Nonetheless, many jobs require a Basic Life Support certification which shows evidence of training in CPR.

Other Qualifications

Assistants must be in good health. Physical stamina is needed because assistants and orderlies spend much of their work time on their feet. A physical examination, including state-regulated disease tests, may be required. A criminal background check also is usually required for employment. Applicants should be tactful, patient, understanding, emotionally stable, and dependable, and should have a desire to help people. They also should be able to work as part of a team, have good communication skills, and be willing to perform repetitive, routine tasks.

Advancement

Opportunities for advancement within these occupations are limited. Assistants and orderlies generally need additional

TABLE 32.3 Projection Data for Employment Trends for Nursing Assistants and Orderlies, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Nursing assistants and orderlies	1,545,200	1,813,000	267,800	17%
Nursing assistants	1,492,100	1,754,100	262,000	18%
Orderlies	53,000	58,800	5,800	11%

formal training or education to enter other health occupations. The most common healthcare occupations for former assistants are licensed practical nurse, registered nurse, and medical assistant.

For some individuals, these occupations serve as entry-level jobs. For example, some high school and college students gain experience working in these occupations while attending school. And experience as an assistant can help individuals decide whether to pursue a career in health care.

Employment Trends

Employment is projected to grow faster than the average. Excellent job opportunities are expected.

Employment Change

Overall employment of nursing assistants is projected to grow 18% between 2014 and 2024, faster than the average for all occupations. However, growth will vary for individual occupations. Employment for orderlies and attendants will grow 11% for the same time period, faster than the average for all occupations, predominantly in response to the long-term care needs of an increasing older adult population. Financial pressures on hospitals to discharge patients as soon as possible should boost admissions to nursing care facilities. As a result, new jobs will be more numerous in nursing and residential care facilities than in hospitals, and growth will be especially strong in community care facilities for the elderly. Modern medical technology will also drive demand for nursing assistants, because as the technology saves and extends more lives, it increases the need for long-term care provided by aides. However, employment growth is not expected to be as fast as for other healthcare support occupations, largely because nursing aides are concentrated in the relatively slower growing nursing and residential care facilities industry sector. In addition, growth will be hindered by nursing facilities' reliance on government funding, which does not increase as fast as the cost of patient care. Government funding limits the number of nursing assistants nursing facilities can afford to have on staff.

Job Prospects

High replacement needs for nursing assistants reflect modest entry requirements, low pay, high physical and emotional demands, and limited opportunities for advancement within the occupation. For these same reasons, the number of people looking to enter the occupation will be limited. Many assistants leave the occupation to attend training programs for other healthcare occupations. Therefore, people who are interested in, and suited for, this work should have good job opportunities. TABLE 32.3 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median hourly wages of nursing assistants were $12.07 in May 2014. The middle 50% earned between $10.26 and $14.43 an hour. The lowest 10% earned less than $9.03, and the highest 10% earned more than $17.39 an hour. Median hourly wages in the industries employing the largest numbers of nursing assistants in May 2014 is shown in TABLE 32.4.

Median hourly wages of orderlies were $11.85 in May 2014. The middle 50% earned between $9.99 and $14.71 an hour. The lowest 10% earned less than $8.71, and the highest 10% earned more than $18.13 an hour. Median hourly wages in the industries employing the largest numbers of orderlies in May 2014 is shown in TABLE 32.5.

TABLE 32.4 Median Hourly Wages in the Industries Employing the Largest Numbers of Nursing Assistants, 2014

Employment services	$13.28
General medical and surgical hospitals	$13.67
Nursing care facilities	$12.09
Community care facilities for the elderly	$11.78
Home healthcare services	$11.60

TABLE 32.5 Median Hourly Wages in the Industries Employing the Largest Numbers of Orderlies

State governments	$14.12
General medical and surgical hospitals	$12.88
Nursing care facilities	$10.76
Community care facilities for the elderly	$10.13
Physician offices	$13.33

Related Occupations

Other occupations that help people who need routine care or treatment include child care workers, home health aides and personal and home care aides, licensed practical and licensed vocational nurses, medical assistants, occupational therapist assistants and aides, registered nurses, and social and human service assistants.

Additional Information

Information about employment opportunities may be obtained from local hospitals, nursing care facilities, home healthcare agencies, psychiatric facilities, state boards of nursing, and local offices of the state employment service.

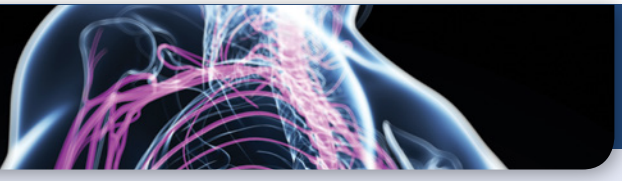
Information on licensing requirements for nursing assistants and lists of state-approved nursing assistant programs are available from state departments of public health, departments of occupational licensing, and boards of nursing.

For more information on nursing assistants, orderlies, and attendants, contact:

- National Association of Health Care Assistants, 501 East 15th St, Joplin, MO 64804. Internet: http://www.nahcacares.org
- National Network of Career Nursing Assistants, 3577 Easton Rd., Norton, OH 44203. Internet: http://www.cna-network.org
- National Association for Home Care and Hospice, 228 7th St SE, Washington, DC 20003. Internet: http:www.nahc.org

For more information on the assisted-living, nursing facilities, developmentally disabled, and subacute care provider industry, contact:

- American Health Care Association, 1201 L St. NW, Washington, DC 20005. Internet: http://www.ahca.org/



LEARNING PORTFOLIO

Issues For Discussion

1. Identify a non-healthcare-related profession in which the basic responsibilities are similar to that of a medical assistant or a nursing assistant. Discuss the job you chose and why you think it is similar.
2. Which of the jobs discussed in this chapter would you most likely recommend to a friend or acquaintance interested in working in the healthcare field? Explain your selection and rationale.

Enrichment Activities

1. View the following videos: *A Day-in-the-Life of a Medical Assistant* at https://www.youtube.com/watch?v=6jbS5bLzQoU and *A Day-in-the-Life of an Ophthalmic Assistant*, http://www.discovereyecareers.org/Profiles/ProfilesofOphthalmicMedicalTechnicians.aspx. Discuss the roles of a medical assistant and an ophthalmic assistant with your instructor and classmates.
2. Develop a chart to compare and contrast the following factors among the professions discussed in this chapter: educational requirements, employment trends, opportunities for advancement, salary potential, and possible career ladders.
3. Use the Internet to research your state's requirements for any of the professions discussed in this chapter. List these requirements if they exist. Compare and contrast licensing, certification, and registration for this career with any other career you have examined in this course.

References

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2. National Healthcareer Association. *Certified Clinical Medical Assistan*t. Internet: http://www.nhanow.com/certifications/clinical-medical-assistant
3. Office of Inspector General, U.S. Department of Health & Human Services. *State Nurse Aide Training: Program Information and Data*. Internet: http://oig.hhs.gov/oei/reports/oei-05-01-00031.pdf

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CHAPTER 33

Home, Personal, and Psychiatric Aides*

Key Terms

Direct support professionals
Home health aides
Personal and home care aides
Psychiatric aides
Psychiatric technicians

* Information in this chapter, unless indicated otherwise, was obtained from Bureau of Labor Statistics, *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016.

HOME HEALTH AIDES

Significant Points

- Job opportunities are expected to be excellent because of rapid growth in home health care and high replacement needs.
- Training requirements vary from state to state, the type of home services agency, and the funding source covering the costs of services.
- Many of these workers work part time and weekends or evenings to suit the needs of their clients.

Work Description

Home health aides and personal and home care aides help people who are disabled, chronically ill, or cognitively impaired. They help older adults who may need assistance to live in their own homes or in residential facilities instead of in health facilities or institutions. They may assist people in hospices and day programs, and help individuals with disabilities go to work and remain engaged in their communities. Most aides work with older adults or physically or mentally disabled clients who need more care than family or friends can provide. Others help discharge hospital patients who have relatively short-term needs.

Aides provide light housekeeping and homemaking tasks such as laundry, changing bed linens, shopping for food, and planning and preparing meals. Aides also may help clients get out of bed, bathe, dress, and groom. Some accompany clients to doctors' appointments or on other errands.

Home health aides provide instruction and psychological support to their clients. They may advise families and patients on nutrition, cleanliness, and household tasks.

Aides' daily routine may vary. They may go to the same home every day or week for months or even years, and they often visit four or five clients on the same day. However, some aides may work solely with one client who is in need of more care and attention. In some situations, this may involve working with other aides in shifts so that the client has an aide throughout the day and night. Aides also work with clients, particularly younger adults, at schools or at the client's work site. In general, home health aides and personal and home care aides have similar job duties. However, there are some small differences.

Home health aides typically work for certified home health or hospice agencies that receive government funding and therefore must comply with regulations to receive funding. This means that they must work under the direct supervision of a medical professional, usually a nurse. These aides keep records of services performed and of clients' condition and progress. They report changes in the client's condition to the supervisor or case manager. Aides also work with therapists and other medical staff.

Home health aides may provide some basic health-related services, such as checking patients' pulse rate, temperature, and respiration rate. An example of a home health aide taking a patient's blood pressure at home is seen in FIGURE 33.1. They also may help with simple prescribed exercises and assist with medications administration. Occasionally, they change simple dressings, give massages, provide skin care, or assist with braces and artificial limbs. With special training, experienced home health aides also may assist with medical equipment such as ventilators, which help patients breathe.

FIGURE 33.1 Home health aide taking patient's blood pressure.

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Work Environment

Work as an aide can be physically demanding. Aides must guard against back injury because they may have to move patients into and out of bed or help them to stand or walk. Aides also may face hazards from minor infections and exposure to communicable diseases, such as hepatitis; they can avoid infections by following proper procedures. Because mechanical lifting devices available in institutional settings are not as frequently available in patients' homes, home health aides must take extra care to avoid injuries resulting from overexertion when they assist patients. These workers experience a larger-than-average number of work-related injuries or illnesses.

Aides also perform tasks that some may consider unpleasant, such as emptying bedpans and changing soiled bed linens. The patients they care for may be disoriented, irritable, or uncooperative. Although their work can be emotionally demanding, many aides gain satisfaction from assisting those in need.

Most aides work with a number of different patients, each job lasting a few hours, days, or weeks. They often visit multiple patients on the same day. Surroundings differ by case. Some homes are neat and pleasant, whereas others are untidy and depressing. Some clients are pleasant and cooperative; others are angry, abusive, depressed, or otherwise difficult.

Home health aides and personal and home care aides generally work alone, with periodic visits from their supervisor. They receive detailed instructions explaining when to visit patients and what services to perform. Aides are responsible for getting to patients' homes, and they may spend a good portion of the workday traveling from one patient to another. Many of these workers work part time and weekends or evenings to suit the needs of their clients.

Employment Opportunities

Home health aides and personal and home care aides held about 913,500 jobs in 2014. The majority of jobs were in home healthcare services, individual and family services, residential care facilities, and private households.

Educational and Legal Requirements

Home health aides must receive formal training and pass a competency test to work for certified home health or hospice agencies that receive reimbursement from Medicare or Medicaid.

Education and Training

Home health aides are generally not required to have a high school diploma. They usually are trained on the job by registered nurses, licensed practical nurses, experienced aides, or their supervisor. Aides are instructed on how to cook for clients, including those on special diets. Furthermore, they may be trained in basic housekeeping tasks, such as making a bed and keeping the home sanitary and safe for the client. Generally, they are taught how to respond to an emergency, learning basic safety techniques. Employers also may train aides to conduct themselves in a professional and courteous manner while in a client's home. Some clients prefer that tasks are done a certain way and will teach the aide. A competency evaluation may be required to ensure that the aide can perform the required tasks.

The U.S. Department of Labor has initiated a Registered Apprentice Program for home health aides employed in long-term care facilities.[1] This program is designed to help employers recruit and retain skilled employees. For workers, these programs provide an opportunity to learn on the job and advance their careers. The apprentice progresses through a structured training and on-the-job learning program established by the employer that includes incremental wage increases associated with steps on a career ladder.

Licensure

Home health aides who work for agencies that receive reimbursement from Medicare or Medicaid must receive a minimum level of training. They must complete both a training program consisting of a minimum of 75 hours and a competency evaluation or state certification program. Training includes information regarding personal hygiene, safe transfer techniques, reading and recording vital signs, infection control, and basic nutrition. Aides may take a competency exam to become certified without taking any of the training. At a minimum, 16 hours of supervised practical training are required before an aide has direct contact with a resident. These certification requirements represent the minimum, as outlined by the federal government. Some states may require additional hours of training to become certified.

Other Qualifications

Aides should have a desire to help people. They should be responsible, compassionate, patient, emotionally stable, and cheerful. In addition, aides should be tactful, honest, and discreet, because they work in private homes. They should possess good time-management skills, so that they can follow agreed-upon schedules and arrive at a client's home on time. Aides also must be in good health. A physical examination, including state-mandated tests for tuberculosis and other diseases, may be required. A criminal background check and a good driving record also may be required for employment.

Certification and Advancement

While offered for some time, certification for home care aides was discontinued by the National Association for Home Care and Hospice (NAHC). Home care associations at the state level offer some forms of certification.

TABLE 33.1 Projections Data for Home Health Aides, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Home health aides	913,500	1,261,900	348,400	38%

Advancement for home health aides is limited. In some agencies, workers start out performing homemaker duties, such as cleaning. With experience and training, they may take on more personal care duties. Some aides choose to receive additional training to become nursing aides, licensed practical nurses, or registered nurses. Some may start their own home care agency or work as a self-employed aide. Self-employed aides have no agency affiliation or supervision and accept clients, set fees, and arrange work schedules on their own.

Employment Trends

Excellent job opportunities are expected for this occupation because rapid employment growth and high replacement needs are projected to produce a large number of job openings.

Employment Change

Employment of home health aides is projected to grow by 38% between 2014 and 2024. The expected growth is due, in large part, to the projected rise in the number of older adults, an age group that often has mounting health problems and that needs some assistance with daily activities. Older adults and other clients, such as the mentally disabled, increasingly rely on home care.

This trend reflects several developments. Inpatient care in hospitals and nursing homes can be extremely expensive, so more patients return to their homes from these facilities as quickly as possible in order to contain costs. Patients, who need assistance with everyday tasks and household chores rather than medical care, can reduce medical expenses by returning to their homes. Furthermore, most patients—particularly the elderly—prefer care in their homes rather than in nursing homes or other inpatient facilities. This development is aided by the realization that treatment can be more effective in familiar surroundings.

Job Prospects

In addition to job openings created by the increased demand for these workers, replacement needs are expected to lead to many openings. The relatively low skill requirements, low pay, and high emotional demands of the work result in high replacement needs. For these same reasons, many people are reluctant to seek jobs in the occupation. Therefore, persons who are interested in and suited for this work—particularly those with experience or training as personal care, home health, or nursing aides—should have excellent job prospects. TABLE 33.1 shows projection data provided by the U.S. Department of Labor for jobs as home health aides.

Earnings

Median hourly wages of home health aides were $10.28 in May 2014. The middle 50% earned between $8.95 and $11.69 an hour. The lowest 10% earned less than $8.19, and the highest 10% earned more than $14.21 an hour. Median hourly wages in the industries employing the largest numbers of home health aides in May 2014 are shown in TABLE 33.2.

Aides receive slight pay increases with experience and added responsibility. Usually, they are paid only for the time worked in the home, not for travel time between jobs, and must pay for their travel costs from their earnings. Most employers hire only on-call hourly workers.

Related Occupations

Home health aides combine the duties of caregivers and social service workers. Workers in related occupations that involve personal contact to help others include childcare workers, licensed practical and licensed vocational nurses, medical assistants, nursing and psychiatric aides, occupational therapist assistants and aides, physical therapist assistants and aides, radiation therapists, registered nurses, and social and human service assistants.

Additional Information

TABLE 33.2 Median Hourly Wages in the Industries Employing the Largest Numbers of Home Health Aides, May 2014

Nursing care facilities	$10.87
Residential mental retardation, mental health, and substance abuse facilities	$10.67
Home healthcare services	$10.79
Individual and family services	$10.31
Community care facilities for the elderly	$10.75

Information on licensing requirements for nursing and home health aides, as well as lists of state-approved nursing aide programs, are available from state departments of public health, departments of occupational licensing, boards of nursing, and home care associations.

For information about voluntary credentials for personal and home care aides, contact:

- National Association for Home Care and Hospice, 228 Seventh St. SE, Washington, DC 20003. Internet: http://www.nahc.org

For information about becoming a home health care aide, visit:

- Paraprofessional Healthcare Institute, 400 E. Fordham Rd, 11th Floor, Bronx, NY 10458. Internet: http://phinational.org/

FIGURE 33.2 Personal care aide assisting elderly patient with meal.
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PERSONAL CARE AIDES

Significant Points

- Job opportunities are expected to be excellent because of rapid growth in home health care and high replacement needs.
- Most personal care aides have high school diplomas and train on the job.
- About one-half of all personal care aides work full time.

Work Description

Personal and home care aides—also called homemakers, caregivers, companions, and personal attendants—work for various public and private agencies that provide home care services. In these agencies, caregivers are likely supervised by a licensed nurse, social worker, or other nonmedical managers. Aides receive detailed instructions explaining when to visit clients and what services to perform for them. However, personal and home care aides work independently, with only periodic visits by their supervisors. These caregivers may work with only one client each day, or five or six clients once a day every week or every two weeks.

Personal and home care aides provide companionship to clients and help them with daily tasks. For example, they may fix meals and/or feed patients, as seen in FIGURE 33.2.

Some aides are hired directly by the patient or the patient's family. In these situations, personal and home care aides are supervised and assigned tasks directly by the patient or the patient's family. Personal and home care aides provide instruction and psychological support to their clients. They may advise families and patients on nutrition, cleanliness, and household tasks.

Aides may also work with individuals who are developmentally or intellectually disabled. These workers are often called **direct support professionals**, and they may assist in implementing a behavior plan, teaching self-care skills, and providing employment support, as well as providing a range of other personal assistance services.

Work Environment

Personal care aides may work in a client's home, in a group home setting, or in a large care community. Many are employed by organizations or agencies that provide in-home support services. These aides may assist individuals receiving hospice care or in day service programs. They may also help individuals with disabilities go to work and stay engaged in their communities.

Because of the physically demanding nature of the job, personal care aides suffer a higher rate of injuries and illnesses than the national average. They may become injured when assisting a patient out of beds or wheelchairs or when lifting patients. Some aides experience danger when working with patients who suffer from emotional and mental disorders or cognitive impairments and become violent or combative. Some aides working with patients who suffer from infections or communicable diseases (e.g., influenza) may contract these diseases.

Employment Opportunities

Personal care aides held almost 1.8 million jobs in 2014. The industries that employ the most personal care aides are listed in TABLE 33.3.

Educational and Legal Requirements

Personal and home care aides are not required to meet formal educational requirements, but most have a high school diploma.

TABLE 33.3 Industries Employing the Most Personal Care Aides, 2014

Services for older adults and persons with disabilities	43%
Home health care agencies	17%
Residential care facilities	9%
Continuing care retirement communities and assisted living facilities for the elderly	6%
Vocational rehabilitation services	3%

Education and Training

Many personal and home care aides are trained on the job by registered nurses, other personal care aides, or directly by their employer. They may receive training in specific tasks, such as helping client's prepare meals or learning how to deal with a client who has a cognitive impairment.

States vary in their requirements for formal education or training programs. Some states may require aides to complete formal training or education programs offered by community colleges, vocational schools, elderly care programs, or home health agencies. Some states require personal and home care aides to undergo a criminal background check and some require aides to undergo a competency evaluation to ensure the aide can perform the required tasks.

Employers may impose their own training requirements. For example, they may require aides to have training in first aid, cardiopulmonary resuscitation (CPR), or infection control.

The U.S. Department of Labor has initiated a Registered Apprentice Program for direct support professionals employed in long-term care facilities.[2] This program is designed to help employers recruit and retain skilled employees. For workers, these programs provide an opportunity to learn on the job and advance their careers. The apprentice progresses through a structured training and on-the-job learning program established by the employer that includes incremental wage increases associated with steps on a career ladder.

Certification and Other Qualifications

Personal and home care aides are not required to be certified in most states. For those aides who offer services paid for through a state's Medicaid plan, they often must meet certification requirements, such as a minimum number of hours of training with a state-approved curriculum and a competency evaluation.

Personal and home care aides work with the public; therefore, they must be neat, well groomed, and possess a courteous, pleasant manner. They must be sensitive to a patient's emotions and be able to place patients at ease. They need physical stamina and must be comfortable performing physical tasks. They should possess good time-management skills, so that they can follow agreed-upon schedules and arrive at a client's home on time. Aides must follow strict rules and protocols when assisting patients, requiring them to be detail oriented. To succeed as a personal and home care aide, they must enjoy helping people.

Advancement

Opportunities for advancement are limited. To enter other healthcare occupations, aides need additional training and education. The most common occupations for former aides are licensed practical nurses, registered nurses, nurse's aides, and medical assistants.

These positions are considered entry-level positions. Some individuals work as aides while pursuing further schooling in the healthcare field. The experience as a personal and home care aide can help someone decide whether to pursue a career in health care.

Employment Trends

Employment is expected to grow much faster than the national average.

Employment Change

Employment of personal and home care aides is expected to grow by 26% from 2014 to 2024, which is much faster than the average for all occupations. Pressures for additional aides will come from the increase in the older adult population predicted for the near future. Many of these older adults are predicted to develop health or mobility problems and require assistance with daily tasks.

Patients often prefer home care over care received in other sites because it is less expensive and allows for a more personal experience. Patient families frequently choose personal and home care aides to care for their loved ones if their loved ones do not require medical care or other services. Some studies have shown that treatment received in the home is more effective than treatment received in a hospital or nursing home.

Job Prospects

Job prospects for personal and home care aides are excellent. High replacement needs reflects modest barriers to entry into the field. Some aides leave the occupation to attend additional training, while other aides leave due to low pay and high emotional demands. This means they will need to be replaced, further creating demand. **TABLE 33.4** shows some projection data provided by the U.S. Department of Labor.

Earnings

Median hourly wages of personal and home care aides were $10.20 in May 2014. The middle 50% earned between $8.66

TABLE 33.4 Projections Data for Employment Trends of Personal and Home Care Aides, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Personal and home care aides	1,768,400	2,226,500	5458,100	26%

TABLE 33.5 Median Hourly Wages in the Industries Employing the Largest Numbers of Personal and Home Care Aides, 2014

Individual and family services	$10.16
Continuing care retirement communities and assisted-living facilities for older adults	$10.65
Residential Intellectual and developmental disability, mental health, and substance abuse facilities	$10.65
Vocational rehabilitation services	$10.40
Home healthcare services	$9.30

and $11.27 an hour. The lowest 10% earned less than $7.47, and the highest 10% earned more than $13.42 an hour. Median hourly wages in the industries employing the largest numbers of personal and home care aides are shown in TABLE 33.5.

Related Occupations

Other occupations that help people who need routine care or treatment include childcare workers, home health aides and personal and home care aides, licensed practical and licensed vocational nurses, medical assistants, occupational therapist assistants and aides, registered nurses, and social and human service assistants.

Additional Information

For more information about a career as a personal care aide, visit:

- Paraprofessional Healthcare Institute, 400 E. Fordham Rd, 11th Floor, Bronx, NY 10458. Internet: http://phinational.org/

PSYCHIATRIC TECHNICIANS AND AIDES

Significant Points

- Most psychiatric technicians and aides work in psychiatric hospital and residential mental health facilities.
- Psychiatric technicians require post secondary education and aides need at least a high school diploma.
- Demand for psychiatric technicians and aides is projected to grow 5%, about as fast as the national average.

Work Description

Psychiatric technicians, also known as mental health technicians, provide therapeutic care to patients who are mentally impaired or emotionally disabled. They work with an interdisciplinary team that includes physicians, psychiatrists, psychologists, psychiatric nurses, social workers, counselors, and therapists. They lead patients in therapeutic and recreational activities, monitor patient's vital signs, give medication, observe and record patient behavior, and when necessary, restrain patients who have become violent. Because of their closeness to patients, they often serve as the eyes and ears of the diagnosing professional, reporting unusual symptoms that need professional attention. Additionally, psychiatric technicians help with admitting and discharging patients and assist patients with activities involved in daily living, such as bathing and eating.

Psychiatric aides, also known as mental health assistants or psychiatric nursing assistants, also care for mentally impaired or emotionally disturbed individuals. They work under a team that may include psychiatrists, psychologists, psychiatric nurses, social workers, counselors, and therapists. In addition to helping patients to dress, bathe, groom themselves, and eat, psychiatric aides socialize with patients and lead them in educational and recreational activities. As a general rule, psychiatric aides do not engage in therapeutic activities with patients in the same way psychiatric technicians do. Psychiatric aides may play card games or other games with patients, watch television with them, or participate in group activities, such as playing sports or going on 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 therapy and treatment. Because they have such close contact with patients, psychiatric aides can have a great deal of influence on patients' outlook and treatment.

Both psychiatric technicians and aides work with patients having a variety of needs. Some patients may be receiving treatment for drug and alcohol addiction while others are severely developmentally disabled and require intensive care. Regardless of patient need, psychiatric technicians and aides strive to provide a safe, clean environment for patients.

Work Environment

Psychiatric technicians and aides must be prepared to care for patients whose illnesses may cause violent behavior or cause them to become disoriented or uncooperative, making the work unpleasant at times. Although their work can be emotionally demanding, many aides gain satisfaction from assisting those in need. Much of their shifts involve standing on their feet for long periods of time and considerable time walking. Psychiatric technicians and aides are prone to injury due to the performance of physically demanding tasks, such as lifting patients.

Both psychiatric technicians and aides generally work a 40-hour week. Full- or part-time work is available for both technicians and aides and shifts may cover nights, weekends, and holidays when caring for patients.

Employment Opportunities

Psychiatric technicians held about 57,900 jobs in 2014. About 76% of psychiatric technicians worked in hospitals. The remaining psychiatric technicians worked in residential care facilities, outpatient care centers, and the offices of healthcare practitioners.

Psychiatric aides held about 77,300 jobs in 2014. Almost 70% of psychiatric aides worked in hospitals. The remaining psychiatric aides worked in residential care facilities, and individual, family, community, and vocational rehabilitation services.

Education and Legal Requirements

In most cases, graduation from a certificate program is necessary for a job as a psychiatric technician. In many cases, a high school diploma or equivalent is necessary for a job as a psychiatric aide.

Education and Training

Psychiatric technicians generally complete a post secondary certificate or associate's degree program. These programs are commonly offered by community colleges and technical schools. Courses cover biology, psychology, and mental health counseling. Supervised structured work experience is typically included in the certificate and associate's degree programs, providing the student with the opportunity to gain real-world experience while training.

Some states also require psychiatric aides to complete a formal training program. However, most psychiatric aides learn their skills on the job from experienced workers before they can work without direct supervision. Some employers provide classroom instruction for newly hired aides, while others rely exclusively on informal on-the-job instruction by a licensed practical nurse or an experienced aide. Such training may last from several days to a few months. Technicians and aides may also attend lectures, workshops, and in-service training.

Licensure and Certification

Four states require licenses to serve as a psychiatric technician: Arkansas, California, Colorado, and Kansas. Although specific requirements vary, these states usually require psychiatric technicians to complete an accredited education program, pass an exam, and pay a fee to be licensed. Psychiatric aides are not required to be licensed.

Psychiatric technicians are able to achieve certification through the American Association of Psychiatric Technicians.[3] Four certification levels are available and the levels vary according to amount of education and work-level experience attained. The certifications allow the technician to add the initials NCPT after their name, meaning Nationally Certified Psychiatric Technician. The certification shows an employer a high level of competency. For those technicians who possess the NCPT certification, they may receive better pay and promotional opportunities.

Other Qualifications

Technicians and aides must be in good health and possess physical stamina, allowing them to lift, move, and sometimes restrain patients. Applicants for these positions should be compassionate, patient, understanding, emotionally stable, and dependable, with a desire to help people. They should also be able to work as a team, have good communication skills, and be willing to perform repetitive and routine tasks. They need good observational skills, so that they can recognize signs of discomfort or changes in patient behavior.

Advancement

Additional training is required for significant advancement. Some become licensed in those states that license psychiatric technicians. Some become licensed practical nurses or registered nurses. Others may pursue college degrees in nursing, special education, social work, psychology, sociology, or related fields.

Employment Trends

Employment is expected to grow about as fast as the national average for all occupations. Psychiatric technicians and aides will be needed in residential care facilities because the number of men and women with cognitive mental diseases, such as Alzheimer's disease, will increase as the nation's population ages and people live longer.

Employment Change

The employment of psychiatric technicians is expected to grow 5% and employment of psychiatric aides is expected to grow 5%, about as fast as the national average. Psychiatric technicians and aides are a small occupation compared

TABLE 33.6 Projections Data for Employment Trends of Psychiatric Technicians and Aides, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Psychiatric technicians and aides	145,200	152,800	7,600	5%
Psychiatric technicians	67,900	71,400	3,500	5%
Psychiatric aides	77,300	81,400	4,100	5%

to nursing aides, orderlies, and attendants. Most psychiatric technicians and aides currently work in hospitals, but the industries most likely to see growth will be residential facilities for people with developmental disabilities, mental illness, and substance abuse problems. There is a long-term trend toward treating psychiatric patients outside of hospitals, because it is more cost effective and allows patients greater independence. Demand for psychiatric technicians and aides in residential facilities will rise in response to increases in the number of older persons, many of whom will require mental health services. Demand for these workers will also grow as an increasing number of mentally disabled adults, formerly cared for by their aging parents, will need care.

Job growth also could be affected by changes in government funding of programs for the mentally ill. Federal health legislation has expanded the number of people who have access to health insurance. Coverage of mental health disorders will expand to more people, due to federal health insurance reform.

Job Prospects

With the nation's population living longer and suffering from cognitive mental disorders, the need for psychiatric technicians and aides will increase. Correctional facilities will see an increase in the need for psychiatric technicians and aides because of the aging prison population. Those care centers offering assistance to those suffering from developmental disabilities, mental illness, and substance abuse will see the need to hire psychiatric technicians and aides. TABLE 33.6 shows some projection data provided by the U.S. Department of Labor.

Earnings

Median hourly wages of psychiatric technicians were $14.97 in May 2014. The middle 50% earned between $11.94 and $20.52 an hour. The lowest 10% earned less than $10.09 and the highest 10% earned more than $27.54 an hour. Median hourly wages in the industries employing the largest number of psychiatric aides in May 2014 is shown in TABLE 33.7.

Median hourly wages of psychiatric aides were $12.61 in May 2014. The middle 50% earned between $10.80 and $15.87 an hour. The lowest 10% earned less than $9.02, and the highest 10% earned more than $20.34 an hour. Median hourly wages in the industries employing the largest numbers of psychiatric aides in May 2014 is shown in TABLE 33.8.

Related Occupations

Other occupations that help people who need routine care or treatment include childcare workers, home health aides and personal and home care aides, licensed practical and licensed vocational nurses, medical assistants, nursing assistants and orderlies, occupational therapist assistants and aides, registered nurses, and social and human service assistants.

Additional Information

For more information about a career and certification as a psychiatric technician, contact:

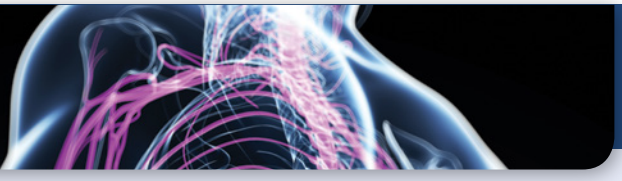
- American Association of Psychiatric Technicians, 1220 S St., Suite 100, Sacramento, CA 95811. Internet: http://www.psychtechs.org

TABLE 33.7 Median Hourly Wages in the Industries Employing the Largest Numbers of Psychiatric Technicians, May 2014

Psychiatric and substance abuse hospitals	$17.85
General medical and surgical hospitals	$16.42
State government	$17.56
Specialty hospitals	$22.95
Residential intellectual and developmentally disabled, mental health, and substance abuse facilities	$12.93

TABLE 33.8 Median Hourly Wages in the Industries Employing the Largest Numbers of Psychiatric Aides, May 2014

Psychiatric and substance abuse hospitals	$14.37
General medical and surgical hospitals	$14.84
State government	$14.42
Individual and family services	$11.75
Residential intellectual and developmentally disabled, mental health, and substance abuse facilities	$14,84



LEARNING PORTFOLIO

Issues for Discussion

1. Many individuals become home health, personal care, or psychiatric aides because they like to help people on a daily basis as a caregiver. While important, the desire to care for others is not all that is needed to be successful in these careers. Brainstorm and discuss with your classmates and instructor other attributes that are needed to make an individual successful in any of these careers.
2. Psychiatric technicians and aides sometimes work with prisoners housed in correctional facilities. Brainstorm and discuss with your classmates and instructor the challenges this setting poses to a psychiatric technician or aide and what actions a technician or aide can take to address these challenges.

Enrichment Activities

1. Develop a chart to compare and contrast the following factors among the professions discussed in this chapter: educational requirements, employment trends, opportunities for advancement, salary potential, and possible career ladders.
2. Use the Internet to research your state's requirements for any of the professions discussed in this chapter. List these requirements if they exist. Compare and contrast licensing, certification, and registration for this career with any other career you have examined in this course.

References

1. Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health & Human Services. *Evaluation Design Options for the Long-Term Care Registered Apprenticeship Program*. Internet: https://aspe.hhs.gov/report/evaluation-design-options-long-term-care-registered-apprenticeship-program/1-introduction
2. Ibid.
3. American Association of Psychiatric Technicians. *The Certification Process*. Internet: http://www.psychtechs.org/cert.shtml

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PART FIVE

Health-Related Professions

Veterinarians and environmental scientists, specialists, and technicians impact the health of all Americans by ensuring a safe water and food supply, while occupational health and safety specialists and technicians ensure safe working conditions for employees. A new career added to this section is Environmental Scientists and Technicians.

Objectives

The following objectives are for chapters in Section V. After studying the chapters in this section, the student should be able to:

- Describe the responsibilities and work of each profession.
- Summarize the role of each profession in supporting human health.
- Classify the specialties in each profession.
- Discuss the environment in which the work takes place.
- Identify any adjunct personnel who assist the professionals with their work.
- Compare and contrast the following factors among the professions: educational requirements, employment trends, opportunities for advancement, salary potential, and career ladders.
- List other professionals who do similar tasks or have similar responsibilities.
- Discuss the advantages of the national organizations to which professionals belong.
- Explain the concept and functions of interdisciplinary teams.

Nurse with tablet: Getty Images/iStockphoto; OR: Shutterstock/xmee;
Dog: Shutterstock/DuxX; Man in lab: Getty Images/iStockphoto;
Dentist: Shutterstock/foto infot; Spine: Shutterstock/Sebastian Kaulitzki

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CHAPTER 34

Veterinary Medicine*

Key Terms

American Association for Laboratory Animal Science (AALAS)
Animal and human health
Animal and Plant Health Inspection Service (APHIS)
Center for Veterinary Medicine (CVM)
Doctor of Veterinary Medicine (DVM/VMD)
Livestock health
Manual dexterity
Public health
Research
Self-contained underwater breathing apparatus (SCUBA)
Standards for pure food from animal sources
Transmissible diseases
Veterinary College Admission Test (VCAT)
Veterinary Medical College Application Service (VMCAS)
Veterinary Technician National Examination (VTNE)
Veterinarians
Veterinary technologists and technicians

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, DC: U.S. Department of Labor; 2016

WORKING WITH ANIMALS

For people who enjoy animals, there are a number of careers that provide opportunities to spend all day caring for, training, or assisting with animals. Examples of occupations that involve working with animals are agricultural workers on farms and ranches; groomers and animal trainers in stables, pet stores, and zoos; and veterinarians, veterinary technologists, and technicians in clinics and hospitals.[1] One of the advantages for many animal workers is that they are self employed and can set their own work schedules. A disadvantage for farmers, ranchers, and veterinarians is that a large financial investment is required to set up a business. Another disadvantage for all animal workers is that the work can be emotionally and physically demanding with a high risk for physical injury.

Educational and experience requirements vary from a high school diploma for groomers to a two-year associate's degree for veterinary technicians to eight years of college for veterinarians. On-the-job training is common for animal workers who do not obtain a college degree; animal trainers and pet sitters can become certified to be more competitive for jobs.

Wages for workers caring for animals vary and are related to the educational requirements and job responsibilities. Median annual wages in May 2014 ranged from $20,610 for non farm animal caretakers and $31,070 for veterinary technologists and technicians to $87,590 for veterinarians. Expected growth from 2014 to 2024 varies from a low of 9% for veterinarians to a high of 19% for veterinary technologists and technicians.

This chapter will review careers for animal care and service workers, veterinary technologists and technicians, and veterinarians.

VETERINARY MEDICINE

Veterinary medicine is one of the oldest healing arts and involves both **animal and human health**. One of its main functions is the control of diseases transmissible from animals to humans, and the discovery of new knowledge in comparative medicine.

Veterinarians contribute to human as well as animal health. A number of veterinarians research ways to prevent and treat various human health problems. For example, veterinarians contributed greatly to conquering malaria and yellow fever, solved the mystery of botulism, produced an anticoagulant used to treat some people with heart disease, and defined and developed surgical techniques for humans, such as hip and knee joint replacements and limb and organ transplants.

Veterinary medicine has come to the rescue of a complex food supply. Doctors of Veterinary Medicine 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**. Safeguarding our food supply by ensuring **livestock health** and wholesomeness is one of veterinary medicine's most important functions. Veterinarians involved in food security often work along the country's borders as animal and plant health inspectors, where they examine imports and exports of animal products to prevent disease here and in foreign countries. Through this work, the whole population is served directly (FIGURE 34.1).

FIGURE 34.1 Some veterinarians work as food inspectors to ensure the food supply is safe.
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VETERINARIANS

Significant Points

- Veterinarians should love animals and be able to get along with their owners.
- Graduation from an accredited college of veterinary medicine and a state license are required; admission to veterinary school is competitive.
- About 75% of veterinarians work in veterinary services.

Work Description

Veterinarians diagnose and treat diseases and injuries in animals. Specifically, they care for the health of pets, livestock, and animals in zoos, racetracks, and laboratories. Some veterinarians use their skills to protect humans against diseases carried by animals and conduct clinical research on human and animal health problems. Others work in basic research, broadening our knowledge of animals and medical science, and in applied research, developing new ways to use knowledge. Most veterinarians diagnose animal health problems, vaccinate against diseases, medicate animals suffering from infections or illnesses, treat and dress wounds, set fractures, perform surgery, and advise owners about animal feeding, behavior, and breeding. Veterinarians who treat animals use medical equipment such as stethoscopes, surgical instruments, and diagnostic equipment, including radiographic and ultrasound equipment. Veterinarians working in research use a full range of sophisticated laboratory equipment.

Companion animal veterinarians treat pets and generally work in private clinics and hospitals and animal shelters. According to the American Veterinary Medical Association (AVMA), more than 75% of veterinarians who work in private clinical practice treat pets. They most often care for cats and dogs, but also treat other pets, such as birds, ferrets, and rabbits. These veterinarians diagnose and provide treatment for animal health problems, consult with owners of animals about preventative health care, and carry out medical and surgical procedures, such as vaccinations, dental work, and setting fractures.

Equine veterinarians work with horses and donkeys. In 2014, about 6% of private practice veterinarians diagnosed and treated horses. *Livestock* or *large animal veterinarians* work with farm animals such as poultry, pigs, cattle, and sheep. There often is a certain amount of overlap between equine veterinarians and livestock veterinarians in some rural areas with limited veterinary coverage. In 2014, about 7% of private practice veterinarians treated livestock. They spend much of their time at farms and ranches treating illnesses and injuries and testing for and vaccinating against disease. Veterinarians check animals for **transmissible diseases** such as *Escherichia coli* and advise owners on the treatment of their animals. They may advise owners or managers about feeding, housing, and general health practices. Horses, poultry, fleece animals, and food animals represent enormous financial investments for their owners, and veterinarians are vital in maintaining the health of the animals. Veterinarians who work with livestock or horses usually drive to farms or ranches to provide veterinary services for herds or individual animals.

Food safety and inspection veterinarians employed by both the state and federal governments inspect and test livestock and animal products for major animal diseases, provide vaccines to treat animals, enhance animal welfare, conduct research to improve animal health, and enforce government food safety regulations. They design and administer animal and public health programs for the prevention and control of diseases transmissible among animals and between animals and people.

Research veterinarians work in laboratories with physicians and other scientists, conducting clinical research on human and animal health problems. These veterinarians may perform tests on animals to identify the effects of drug therapies, test new surgical techniques, or advise pet food manufacturing companies. They may also research how to prevent, control, and eliminate food- and animal-borne illnesses and diseases.

Branches of the federal government that employ veterinarians are the United States Department of Agriculture (USDA), National Institutes of Health (NIH), Centers for Disease Control (CDC), and Food and Drug Administration (FDA). Veterinarians employed by the USDA's **Animal and Plant Health Inspection Service (APHIS)** are meat, poultry, or egg product inspectors who examine slaughtering and processing plants; they also check live animals and carcasses for disease, and enforce government regulations regarding food purity and sanitation (FIGURE 34.2).

The **Center for Veterinary Medicine (CVM)** in the FDA employs veterinarians who make recommendations for the safety of pet food as well as drug safety, such as antibiotics

FIGURE 34.2 Veterinarians keep dairy cattle healthy for milk production.

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used in both humans and livestock. Veterinarians working for the CDC monitor food-borne illness, especially illnesses transmitted through meat and dairy products such as *Salmonella*, *E. coli*, and *Listeria*; for the NIH, veterinarians do research to improve the detection of the presence of bacteria that cause food-and animal-borne illness as well as the transmission of disease through food and water. In addition, U.S. Army Corps and U.S. Air Force veterinarians monitor the health and well-being of military working dogs and horses.

Work Environment

In 2014 about three-fourths of veterinarians worked in the veterinary services industry. Others held positions at colleges or universities; in private industry, such as in medical and research laboratories; and in federal, state, or local government. About 17% of veterinarians were self employed—or had their own private practice.

Veterinarians working in nonclinical areas, such as **public health** and **research**, work in clean, well-lighted offices or laboratories and have working conditions similar to those of other professionals who work in these environments. Veterinarians in nonclinical areas spend much of their time dealing with people rather than animals.

Veterinarians who work with livestock or horses spend time driving between their offices and farms or ranches. They work outdoors in all kinds of weather and may have to treat animals or perform surgery, often under unsanitary conditions, such as a stall or a shed. Veterinarians in private or clinical practice often work long hours in a noisy indoor environment. Those in group practices may take turns being on call for evening, night, or weekend work; solo practitioners may work extended hours—including weekend hours—responding to emergencies or squeezing in unexpected appointments. Some work nights or weekends, and they may have to respond to emergencies outside of scheduled work hours. About one in three veterinarians worked more than 50 hours per week in 2012. Sometimes they have to deal with emotional or demanding pet owners. When working with animals that are frightened or in pain, they risk being bitten, kicked, or scratched.

Employment Opportunities

Veterinarians held about 78,300 jobs in 2014. According to the AVMA, 80% of veterinarians were employed in a solo or group practice. Most others were salaried employees of colleges or universities; medical schools; private industry, such as research laboratories and pharmaceutical companies; and federal, state, or local governments.

The federal government employed about 1,300 civilian veterinarians, chiefly in the U.S. Department of Agriculture and the U.S. Food and Drug Administration's Center for Veterinary Medicine. A few veterinarians work for zoos, but most veterinarians caring for zoo animals are private practitioners who contract with the zoos to provide services, usually on a part-time basis. In addition, many veterinarians hold veterinary faculty positions in colleges and universities and are classified as teachers.

Educational and Legal Requirements

Veterinarians must obtain a **Doctor of Veterinary Medicine (DVM)** degree and a state license. Admission to veterinary school is competitive.

Education and Training

Prospective veterinarians must graduate with a DVM degree (sometimes called VMD) from a four-year program at an accredited college of veterinary medicine that includes classroom, laboratory, and clinical components. In 2015, there were 28 colleges in the U.S. and five colleges in Canada that met accreditation standards set by the Council on Education of the American Veterinary Medical Association (AVMA). Students can apply electronically to specific colleges through the **Veterinary Medical College Application Service (VMCAS)**, a centralized application program for participating veterinary medical colleges.[2]

The webpage listed at the end of the chapter under *Additional Information* includes tips for completing an application.

The prerequisites for admission to veterinary programs vary. Although not required, most applicants to veterinary school have a bachelor's degree. Veterinary medical colleges typically require applicants to have taken many science classes, including biology, chemistry, anatomy, physiology, zoology, microbiology, and animal science. Most programs also require math, humanities, and social science courses. Applicants without a bachelor's degree face a difficult task in gaining admittance.

Pre-veterinary courses should emphasize the sciences. Veterinary medical colleges typically require applicants to have taken 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 pre-calculus. Most veterinary medical colleges also require some courses in English or literature, other humanities, and the social sciences.

In addition to satisfying pre-veterinary 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 the college to which they are applying. Admission to veterinary school is competitive and fewer than half of all applicants were accepted in 2014. Students can strengthen their application by gaining volunteer or work experience with animals either on a farm,

ranch, or animal shelter or by working with veterinarians in clinics or in a research laboratory.

Because of the length of training, the average loan debt for veterinarians is $135,000. Suggestions for limiting student debt are to develop a financial plan, take time between college graduation and attending veterinary school to work and save money, and to establish residency to reduce the cost of out-of-state tuition.[3] The USDA sponsors a loan repayment program for veterinary medicine students to prepare veterinarians to practice in rural and other high-need areas in food animal production, food safety, and public health.[4]

In veterinary medicine programs, students take courses on normal animal anatomy and physiology, as well as disease prevention, diagnosis, and treatment. Most programs include three years of classroom, laboratory, and clinical work. Students typically spend the final year of the four-year program doing clinical rotations in a veterinary medical center or hospital. In veterinary schools today, increasingly, courses include general business management and career development classes to help new veterinarians learn how to effectively run a practice.

New graduates with a DVM degree may begin to practice veterinary medicine once they receive their license, but many new graduates choose to enter a one-year internship. Interns receive a small salary but often find that their internship experience leads to better-paying opportunities later, relative to those of other veterinarians. Veterinarians who then seek board certification also must complete a three- to four-year residency program that provides intensive training in AVMA-recognized veterinary specialties.

Licensure

All states and the District of Columbia require veterinarians to have a license. Requirements vary by state, but all states require prospective veterinarians to complete an accredited veterinary program and to pass the North American Veterinary Licensing Examination. Veterinarians working for the state or federal government may not be required to have a state license, because each agency has different requirements.

Most states not only require the national exam but also have a state exam that covers state laws and regulations. Few states accept licenses from other states, so veterinarians who want to be licensed in another state usually must take that state's exam. Nearly all states have continuing education requirements for licensed veterinarians.

Certification and Other Qualifications

The AVMA offers certification in 40 specialties, such as internal medicine, nutrition, radiology, anesthesiology, surgery, and exotic small-animal medicine. Although certification is not required for veterinarians, it can show exceptional skill and expertise in a particular field and is often required for veterinarians that work in teaching hospitals affiliated with colleges of veterinary medicine. To sit for the certification exam, veterinarians must have a certain number of years of experience in the field, complete additional education, and complete a residency program, typically lasting three to four years. Requirements vary by specialty.

Personal qualities to be successful as a veterinarian are compassion for both animals and their owners and excellent interpersonal skills necessary for communicating with owners about the condition of their animals and treatment options. Veterinarians should love animals and have the ability to get along with their owners, especially pet owners, who usually have strong bonds with their pets. Management skills are important for veterinarians supervising technicians and other workers in clinics, hospitals, and laboratories or directing inspectors in the food industry. The ability to solve problems and make decisions is important when making a diagnosis and selecting the best treatment option for ill or injured animals as well as changing a treatment plan when necessary. In addition, **manual dexterity** is required for veterinarians, because they must control their hand movements and be precise when treating injuries and performing surgery.

Advancement

DVMs who do an internship after graduation will have an advantage when applying for competitive or better-paying positions or in preparation for a residency program for a specialty area of practice such as surgery or ophthalmology. Veterinarians in private practice can expect to expand their practice by providing excellent care and customer service.

Employment Trends

Employment of veterinarians is expected to be about average through 2024.

Employment Change

Employment of veterinarians is projected to grow 9% from 2014 to 2024, average for all occupations. Due to overall slowing growth of the veterinary services industry, employment gains of veterinarians will be slower than in the past.

In private practice, demand for veterinarians will increase as more people are expected to take their pets for visits. Also, veterinary medicine has advanced considerably, and many of the veterinary services offered today are comparable to health care for humans, including cancer treatments and kidney transplants. Many pet owners consider their pets as members of the family and place a high value on their pets, an example of the human-animal bond. Pet owners are becoming more aware of the availability of advanced care and are more willing to pay for intensive veterinary care than owners in the past. Furthermore, the number of pet owners purchasing pet insurance is rising, increasing the likelihood that considerable money will be spent on veterinary care.

Although veterinary services are growing, the number of new graduates from veterinary schools has increased

to roughly 3,000 per year, resulting in greater competition for jobs than in recent years. Additionally, most veterinary graduates are attracted to companion animal care, so there will be fewer job opportunities in that field, as overall growth of the veterinary services industry slows.

Job opportunities in farm animal care will be better, because fewer veterinarians compete to work on large animals. Also, there will be some job opportunities available in the federal government in food safety, animal health, and public health.

There also will be employment growth in fields related to food and animal safety, disease control, and public health. As the population grows, more veterinarians will be needed to inspect the food supply and to ensure animal and human health. Homeland security also may provide opportunities for veterinarians involved in efforts to maintain abundant food supplies and minimize animal diseases in the United States and in foreign countries.

Job Prospects

Candidates can expect very strong competition for most veterinarian positions. Job seekers with specializations and prior work experience should have the best job opportunities.

Given the training they receive from veterinary school, veterinarians are highly qualified for nontraditional industry positions in fields such as public health, disease control, corporate sales, and population studies. With potentially fewer opportunities in companion animal care, many graduating veterinarians will likely have better job prospects in these areas. TABLE 34.1 shows some projections data.

Earnings

Median annual wages of veterinarians were $87,590 in May 2014; the top 10% earned more than $157,390 and the bottom 10% earned less than $52,530.

Related Occupations

Related occupations include biological scientists, chiropractors, dentists, medical scientists, optometrists, physicians and surgeons, podiatrists, and veterinary technologists and technicians.

VETERINARY TECHNOLOGISTS AND TECHNICIANS

Significant Points

- Animal lovers get satisfaction from this occupation, but aspects of the work can be unpleasant, physically and emotionally demanding, and sometimes dangerous.
- There are primarily two levels of education and training for entry to this occupation: a two-year program for veterinary technicians and a four-year program for technologists.
- Employment is expected to grow much faster than average.
- Overall job opportunities should be excellent; however, keen competition is expected for jobs in zoos and aquariums.

Work Description

Owners of pets and other animals today expect superior veterinary care. To provide this service, veterinarians use the skills of **veterinary technologists and technicians**, who perform many of the same duties for a veterinarian that a nurse would for a physician. Although specific job duties vary by employer, there is often little difference between the tasks carried out by technicians and technologists, despite differences in formal education and training. However, most technicians work in private clinical practice, while many technologists have the option to work in more advanced, research-related jobs.

Many veterinary technologists and technicians work in private clinics, animal hospitals, and veterinary testing laboratories (FIGURE 34.3).

Both conduct clinical work in a private practice under the supervision of a licensed veterinarian. They often perform various medical tests and treat and diagnose medical conditions and diseases in animals. For example, they may perform laboratory tests such as urinalysis and blood counts, assist with dental care, prepare tissue samples, take blood samples, and assist veterinarians in a variety of other diagnostic tests. Some technicians record case histories, develop X-rays, provide specialized nursing care, administer anesthesia, and assist with surgery. Some may sterilize laboratory and surgical equipment and provide routine postoperative

TABLE 34.1 Projections Data for Veterinarians, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Veterinarians	70,300	85,200	6,900	9%

FIGURE 34.3 Veterinary technologists and technicians work in small animal clinics with veterinarians.
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care (**FIGURE 34.4**). Occasionally, veterinary technologists vaccinate newly admitted animals.

Experienced technicians may discuss a pet's condition with its owners and train new clinic personnel. Veterinary technologists and technicians assisting small-animal practitioners usually care for small pets, such as cats and dogs, but can perform a variety of duties with livestock and exotic animals. Very few veterinary technologists work in mixed-animal practices where they care for both small animals kept as pets and large animals such as horses or cattle.

Besides working in private clinics and animal hospitals, some technologists and technicians work in research facilities under the guidance of veterinarians or physicians. Even though educational levels are different, technologists and technicians who work in research-related jobs do similar work. For example, they are responsible for making sure that animals are handled carefully and humanely. They may administer medications, prepare samples for laboratory examinations, or record information on an animal's genealogy, diet, weight, medications, food intake, and clinical signs of pain and distress. They help veterinarians or scientists on research projects in areas such as biomedical research, disaster preparedness, and food safety.

FIGURE 34.4 Veterinary technicians assist with surgery by maintaining sterile instruments.
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Work Environment

Veterinary technologists and technicians typically work in private clinics, laboratories, and animal hospitals. They may also work in boarding kennels, animal shelters, and zoos. Some of the work may be unpleasant, and physically and emotionally demanding. For example, they may witness abused animals or may need to help euthanize sick, injured, or unwanted animals. Those working for humane societies and 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. Veterinary technologists and technicians have a higher rate of injuries and illnesses than the national average for all employees. When working with scared or aggressive animals, they may be bitten, scratched, or kicked, and such injuries can be very serious when the animal involved is large (e.g., a large dog or a horse) or potentially carries infection (e.g., cat scratch fever).

Many clinics and laboratories are staffed 24 hours a day, so technologists and technicians may work evenings, weekends, and holidays. Many have variable schedules, and some must work seven days a week.

Employment Opportunities

Veterinary technologists and technicians held about 95,600 jobs in 2014. About 91% worked in veterinary services. The remainder worked for colleges and universities, scientific and research services, and social advocacy organizations such as animal shelters.

Educational and Legal Requirements

There are primarily two levels of education and training for entry to this occupation: a two-year program for veterinary technicians and a four-year program for veterinary technologists. Typically, both technologists and technicians must pass a credentialing exam and must become registered, licensed, or certified, depending on the state in which they work.

Education and Training

Most entry-level veterinary technicians have a two-year associate's degree from an AVMA-accredited community college program in veterinary technology in which courses are taught in clinical and laboratory settings using live animals. In 2015, 23 colleges offered veterinary technology

programs that culminate in a four-year bachelor's degree in veterinary technology. These four-year colleges, in addition to some vocational schools, also offer two-year programs in laboratory animal science. About nine schools offer distance learning.

In 2015, 231 veterinary technology programs in 48 states and Puerto Rico were accredited by the AVMA. Graduation from an AVMA-accredited veterinary technology program allows students to take the credentialing exam in any state in the country.

Those interested in careers as veterinary technologists and technicians should take as many high school science, biology, and math courses as possible. Science courses taken beyond high school, in an associate's or bachelor's degree program, should emphasize practical skills in a clinical or laboratory setting.

Technologists and technicians usually begin work as trainees under the direct supervision of a veterinarian. Entry-level workers whose training or educational background encompasses extensive hands-on experience with diagnostic and medical equipment usually require a shorter period of on-the-job training.

Licensure

Each state regulates veterinary technicians and technologists differently; however, all states require successful completion of a credentialing exam following coursework. Most states use the **Veterinary Technician National Examination (VTNE)**. Candidates are tested for competency through an examination that is regulated by the State Board of Veterinary Examiners or the appropriate state agency. Passing the exam assures the public that the technician or technologist has sufficient knowledge to work in a veterinary clinic or hospital. Depending on the state, candidates may become registered, licensed, or certified. Candidates usually can have their passing scores transferred from one state to another, if both states use the same exam. Three states allow on-the-job training to qualify for the VTNE exam. These states are Alaska, California, and Wisconsin.[5]

Certification and Other Requirements

The **American Association for Laboratory Animal Science** (**AALAS**) certification is recommended for those seeking employment in a research facility. AALAS offers certification for three levels of technician competence, with a focus on three principal areas: animal husbandry, facility management, and animal health and welfare. Those who wish to become certified must satisfy a combination of education and experience requirements prior to taking one of the AALAS examinations. Work experience must be directly related to the maintenance, health, and well-being of laboratory animals and must be gained in a laboratory animal facility as defined by AALAS.[6] For more information about certification, go to the AALAS website listed under *Additional Information* at the end of the chapter.

Desirable personal characteristics of veterinary technologists and technicians are compassion for animals and their owners when dealing with sick or injured animals and excellent communication skills in order to be able to communicate with supervisors and other staff members and animal owners. In addition, they need to notice details about the animal's behavior to identify illness and injury and when completing testing or giving medications. Manual dexterity is necessary in handling and treating animals and laboratory instruments.

Advancement

As they gain experience, technologists and technicians take on more responsibility and carry out more assignments with little veterinary supervision. Some eventually may become supervisors. They can specialize in a particular discipline. Specialties include dental technology, anesthesia, emergency and critical care, and zoological medicine.

Employment Trends

Employment is expected to grow much faster than average from the need to replace veterinary technologists and technicians who leave the occupation.

Employment Change

Employment of veterinary technologists and technicians is projected to grow 19% from 2014 to 2024, much faster than the average for all occupations. Pet owners are becoming more affluent and more willing to pay for advanced veterinary care. Because veterinarians perform specialized tasks, clinics and animal hospitals are increasingly using veterinary technologists and technicians to provide more general care and perform more laboratory work. Furthermore, veterinarians will continue to prefer higher-skilled veterinary technologists and technicians over veterinary assistants for more complex work.

Continued support for public health, food and animal safety, and national disease control programs, as well as biomedical research on human health problems, also will contribute to the demand for veterinary technologists, although the number of positions in these areas is lower than in private practice.

Job Prospects

Overall job opportunities are expected to be good, particularly in rural areas. However, the number of veterinary technology programs has been growing rapidly in recent years, so the number of new graduates available for jobs over the coming decade should result in greater competition than in the past. Workers who leave the occupation each year will also result in job openings. TABLE 34.2 shows some projections data.

TABLE 34.2 Projections Data for Veterinary Technologists and Technicians, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Veterinary technologists & technicians	95,600	113,600	17,900	19%

Earnings

Median annual wages of veterinary technologists and technicians were $31,070 in May 2014. Veterinary technologists in research jobs earned more than in other types of jobs.

Related Occupations

Others who work extensively with animals include animal care and service workers, veterinarians, veterinary assistants, and laboratory animal caretakers.

ANIMAL CARE AND SERVICE WORKERS

Significant Points

- Animal lovers get satisfaction in this occupation, but the work can be unpleasant, physically and emotionally demanding, and sometimes dangerous.
- Most workers are trained on the job, but employers generally prefer to hire people who have experience with animals and a high school diploma.
- Zookeepers and marine mammal trainers usually require a bachelor's degree.
- Most positions will present excellent employment opportunities; however, keen competition is expected for jobs as zookeepers and marine mammal trainers.
- Earnings are relatively low.

Work Description

Animal care and service workers provide care for animals. They feed, water, groom, bathe, and exercise pets and other nonfarm animals. Job tasks vary by position and place of work. Boarding kennels, pet stores, animal shelters, veterinary hospitals and clinics, stables, aquariums and natural aquatic habitats, zoological parks, and many laboratories house animals and employ animal care and service workers. They also clean, disinfect, and repair animal cages. They play with the animals, provide companionship, and observe behavioral changes that could indicate illness or injury. The following are examples of types of animal care and service workers.

Nonfarm animal caretakers often work with cats and dogs in animal shelters. All caretakers attend to the basic needs of animals, but experienced caretakers may have more responsibilities, such as helping vaccinate or euthanize animals that are seriously ill or injured, under the direction of a veterinarian. Caretakers also may have administrative duties, such as keeping records, answering questions from the public, educating visitors about pet health, or screening people who want to adopt an animal.

Animal trainers train animals for riding, security, performance, obedience, or assisting people with disabilities. Most animal trainers work with dogs and horses, but some work with marine mammals, such as dolphins. They help animals become familiar with human voice and contact, and teach animals to respond to commands. Trainers teach a variety of skills. For example, some may train dogs to guide people with disabilities such as blindness; others teach animals to cooperate with veterinarians or train animals for a competition or show such as a circus. Training also can be a good tool for facilitating the relocation of animals from one habitat to another, for example, easing the process of loading horses onto trailers. Trainers in shows work to display the talent and ability of an animal, such as a dolphin, through interactive programs to educate and entertain the public.

In kennels, veterinary clinics or pet supply stores, *groomers* specialize in maintaining a pet's appearance. In addition to cutting, trimming, and styling the pet's fur, groomers clip nails, clean ears, and bathe pets (FIGURE 34.5).

FIGURE 34.5 Animal groomers bathe and trim fur and nails of pets.
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Groomers may operate their own business, work in a grooming salon, or run their own mobile grooming service that travels to clients' homes. Demand for mobile grooming services is growing because services are convenient for pet owners and allow the pet to stay in a familiar environment. Groomers clean and sanitize equipment to prevent the spread of disease, as well as maintain a clean and safe environment for the animals. Groomers also schedule appointments and collect general information on the pets' health and behavior. Groomers sometimes are the first to notice a medical problem, such as an ear or skin infection that requires veterinary care.

In stables, *grooms* are responsible for feeding, grooming, and exercising horses. They saddle and unsaddle horses, give them rubdowns, and cool them off after a ride. In addition, grooms clean stalls, polish saddles, and organize the tack room (where the harness, saddle, and bridle are stored). They also take care of food and supplies for the horses. Experienced grooms sometimes help train horses.

In zoos, *keepers* care for animals in zoos where they plan diets, feed, and monitor the eating patterns of animals. They also clean the animals' enclosures, monitor their behavior, and watch for signs of illness or injury. Depending on the size of the zoo, they may work with one species or multiple species of animals. Keepers may help raise young animals, and they often spend time answering questions from the public.

Kennel attendants care for pets while their owners are working or traveling. Basic attendant duties include cleaning cages and dog runs, and feeding, exercising, and playing with animals. Experienced attendants also may provide basic health care, bathe animals, and attend to other basic grooming needs or assist with obedience training.

In private homes, *pet sitters* look after animals while their owner is away. They go to the pet owner's home, allowing the pet to stay in familiar surroundings. Most pet sitters feed, walk, and play with pets daily. More experienced pet sitters also may bathe, groom, or train pets. Pet sitters typically care for dogs, cats or other small pets. By caring for the pet in its normal surroundings, trauma is reduced, and the animal can maintain the usual diet and exercise pattern.

Work Environment

Many animal caretaker jobs require little or no training and have flexible work schedules, making them suitable for people seeking a first job or for temporary or part-time work; some have their own business

Work with animals can be unpleasant, physically or emotionally demanding, and sometimes dangerous. Their work often involves kneeling, crawling, repeated bending, and, occasionally, lifting heavy supplies such as bales of hay or bags of feed. Animal caretakers must take precautions when treating animals with germicides or insecticides. They may work outdoors in all kinds of weather, and the work setting can be smelly and noisy. Caretakers of show and sports animals are often required to travel to competitions.

Animal care and service workers who witness abused animals or who assist in euthanizing unwanted, aged, or hopelessly injured animals may experience emotional distress. Those working for private humane societies and municipal animal shelters often deal with the public, some of whom may be hostile. Such workers must maintain a calm and professional demeanor while helping to enforce the laws regarding animal care. Animal care and service workers have a higher rate of injuries and illnesses than the national average. Caretakers may be bitten, scratched, or kicked while holding, cleaning, or restraining an animal.

The advantages of working as an animal caretaker is that many jobs require little or no training and have flexible work schedules, making them suitable for people seeking a first job or for temporary or part-time work. About one-third of animal caretakers worked part time and one-fourth were self employed in 2012.

Disadvantages are that animals need care around the clock, so many facilities, such as kennels, zoos, animal shelters, and stables, operate 24 hours a day. Therefore, caretakers often work irregular hours, including evenings, weekends, and holidays. Pet sitters often work weekends and holidays because that is when pet owners leave town. However, pet groomers and pet sitters have the flexibility of setting their own schedule.

Employment Opportunities

Animal care and service workers held 241,600 jobs in 2014. About 85% worked as nonfarm animal caretakers, the remainder worked as animal trainers. Nonfarm animal caretakers often worked in boarding kennels, animal shelters, stables, grooming shops, pet stores, animal hospitals, and veterinary offices. A significant number of caretakers worked for animal humane societies, racing stables, dog and horse racetrack operators, zoos, theme parks, circuses, and other amusement and recreation services.

Educational and Legal Requirements

On-the-job training is the most common way animal care and service workers learn their work; however, employers generally prefer to hire people who have experience with animals. Some jobs require formal education.

Education and Training

On-the-job training is the usual way that animal care and service workers learn their job, but many animal care facilities require at least a high school diploma, and many employers prefer to hire those who have experience with animals. Animal care and service workers begin by performing

basic tasks and work up to positions that require more responsibility and experience. Some workers are trained before starting a position; for example, caretakers in shelters can attend training programs through the Humane Society of the United States and the American Humane Association.

Pet groomers often learn their trade by training under the guidance of an experienced groomer, although they can also attend one of 50 state-licensed grooming schools. The length of each program varies with the school and the number of advanced skills taught.

Dog trainers and horse trainers typically qualify by taking courses at community colleges or vocational and private training schools.

Most zoos require keepers to have a bachelor's degree in biology, animal science, or a related field and marine mammal trainers usually need a bachelor's degree in marine biology, animal science, biology, or a related field.

Licensure

Licenses are not required to be employed as animal caretakers or trainers.

Certification and Other Qualifications

Although not required, certifications available in many animal service occupations may help workers establish their credentials and enhance their skills. For dog trainers, certification by a professional association or one of the hundreds of private vocational or state-approved trade schools can be advantageous. The National Dog Groomers Association of America offers certification for master status as a groomer. To earn certification, applicants must demonstrate their practical skills and pass two exams. The National Association of Professional Pet Sitters offers a home-study certification for those who wish to become pet care professionals. Topics include business management, animal care, and animal health issues, and applicants must pass a written exam to earn certification.

Desirable personal characteristics for animal care workers are compassion when working with animals and their owners and excellent customer service skills to satisfy pet owners. Other needed qualities are patience and problem-solving skills, especially for animal trainers who may need to change their approach for different animals. Often, four to five trainers work with a group of animals at one time; therefore, trainers should be able to work as part of a team. Physical stamina is important for animal care and service workers because their work often involves kneeling, crawling, bending, and occasionally lifting heavy supplies, such as bags of food.

Marine mammal trainers must also be good swimmers; certification in using a **self-contained underwater breathing apparatus (SCUBA)** is a plus. Most horse-training jobs have minimum weight requirements for candidates due to the weight-bearing limits some horses may have because of prior injury or simply the animal's small size (e.g., ponies).

Advancement

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. Pet 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 salons or mobile grooming business.

Advancement for kennel caretakers takes the form of promotion to kennel supervisor, assistant manager, and manager; those with enough capital and experience may open up their own kennels. Zookeepers may advance to senior keeper, assistant head keeper, head keeper, and assistant curator, but very few openings occur, especially for the higher-level positions.

Employment Trends

Because many workers leave this occupation each year, there will be excellent job opportunities for most positions. However, keen competition is expected for jobs as zookeepers and marine mammal trainers.

Employment Change

Employment of animal care and service workers is expected to grow 11% over the 2014 to 2024 decade, faster than the average for all occupations. The companion pet population, which drives employment of animal caretakers in kennels, grooming shops, animal shelters, and veterinary clinics and hospitals, is anticipated to increase. Pet owners—including a large number of baby boomers, whose disposable income is expected to increase as they age—are expected to increasingly purchase grooming services, daily and overnight boarding services, training services, and veterinary services, resulting in more jobs for animal care and service workers. As more pet owners consider their pets part of the family, demand for luxury animal services and the willingness to spend greater amounts of money on pets should continue to grow. Demand for marine mammal trainers, on the other hand, is expected to grow slowly.

Demand for animal care and service workers in animal shelters is expected to grow as communities increasingly recognize the connection between animal abuse and abuse toward humans and continue to commit private funds to animal shelters, many of which are working hand in hand with social service agencies and law enforcement teams.

Animal care and service workers will continue to be needed as the variety and number of pet services increases. Employment in kennels, grooming shops, and pet stores is projected to increase to keep up with the growing demand for animal care.

Job opportunities for animal care and service workers may vary from year to year because the strength of the

economy affects demand for these workers. Pet owners tend to spend more on animal services when the economy is strong.

Job Prospects

Due to employment growth and the need to replace workers who leave the occupation, job opportunities for most positions should be excellent. Prospective groomers also will face excellent opportunities as the companion dog population is expected to grow and services such as mobile grooming continue to grow in popularity.

Candidates for positions as marine mammal trainers, horse trainers, and zookeepers, however, will face very strong competition, since there are relatively few positions and because of the popularity of these occupations. Furthermore, the cost of owning and riding horses is too high for many people, so employment of horse trainers is not expected to grow as fast as employment of those who train companion pets, such as dogs.

TABLE 34.3 shows some projections data from the National Employment Matrix.

Earnings

Wages are relatively low. Median annual wages of nonfarm animal caretakers were $20,340 in May 2014. Median annual wages in the industries employing the largest numbers of nonfarm animal caretakers in May 2014 are shown in TABLE 34.4.

Median annual wages of animal trainers were $25,770 in May 2014.

Related Occupations

Others who work extensively with animals include agricultural workers, animal control workers, biological scientists, farmers, ranchers, agricultural managers, veterinarians, veterinary assistants and laboratory animal caretakers, and veterinary technologists and technicians.

TABLE 34.4 Mean Annual Wages in the Industries Employing the Largest Numbers of Nonfarm Animal Caretakers, May 2014[7]

Industry	Salary
Spectator sports	$24,500
Other personal services	$22,730
Social advocacy organizations	$21,580
Veterinary services	$21,300
Other miscellaneous store retailers	$21,280

ADDITIONAL INFORMATION

For information on careers in veterinary medicine and a listing of AVMA-accredited veterinary medical colleges and veterinary technology programs, contact:

- American Veterinary Medical Association, 1931 N. Meacham Rd., Suite 100, Schaumburg, IL 60173-4360. Internet: http://www.avma.org/

For information on veterinary education including applying to schools of veterinary medicine, loans, and scholarships, contact:

- Association of American Veterinary Medical Colleges, 1101 Vermont Ave. NW, Suite 301, Washington, DC 20005. Internet: http://www.aavmc.org

For veterinary licensing boards in the U.S. and Canada, contact:

- National Board of Veterinary Medical Examiners, P.O. Box 1356, Bismarck, ND 58502. Internet: http://www.nbvme.org/licensing-boards-list/

For information on the Veterinary Technician National Examination (VTNE) required for state licensure, contact:

- American Association of Veterinary State Boards, 380 W. 22nd Street, Suite 101, Kansas City, MO 64108. Internet: https://www.aavsb.org/vtne/

TABLE 34.3 Projections Data for Animal Care and Service Workers, Animal Trainers, and Nonfarm Animal Caretakers, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Animal care and service workers	241,600	267,300	25,700	11%
Animal trainers	36,800	40,900	4,100	11%
Nonfarm animal caretakers	204,800	226,400	21,600	11%

For information on obtaining a veterinary position with the federal government, visit:

- Office of Personnel Management through USAJOBS. Internet: https://www.usajobs.gov/

For information on certification as a laboratory animal technician or technologist, contact:

- American Association for Laboratory Animal Science, 9190 Crestwyn Hills Dr., Memphis, TN 38125. Internet: http://www.aalas.org/

For information on jobs for veterinary technicians, contact:

- The National Association of Veterinary Technicians in America (NAVTA), P.O. Box 1227, Albert Lea, MN 56007. Internet: http://www.navta.net/

For career information and information on training, certification, and earnings of a related occupation—animal control officers—contact:

- National Animal Control Association, P.O. Box 480851, Kansas City, MO 64148-0851. Internet: http://www.nacanet.org

For information about internships in zoos and aquariums, contact:

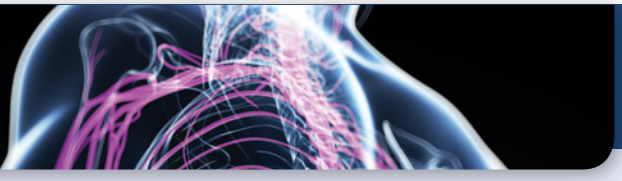
- American Association of Zoos & Aquariums, 8403 Colesville Rd, Suite 710, Silver Spring, MD 20910. Internet: https://www.aza.org/careers-zoos-aquariums/

For general information on pet grooming careers, including workshops and certification information, contact:

- National Dog Groomers Association of America, P.O. Box 101, Clark, PA 16113. Internet: http://www.nationaldoggroomers.com

For information on pet sitting, including certification information, contact:

- National Association of Professional Pet Sitters, 1120 Rt 73, Suite 200, Mount Laurel, NJ 08054. Internet: http://www.petsitters.org



LEARNING PORTFOLIO

Issues for Discussion

1. Go to the Association of American Veterinary Medical Colleges to learn more about becoming a veterinarian and review the brochure, *Becoming a Veterinarian and Make a Difference.* What are the course recommendations for high school and college students? List three other recommendations for gaining more knowledge and experience to strengthen an application to veterinary school. March 2014. Internet: http://www.aavmc.org/Publications/Career-Brochure.aspx
2. Listen to the five-minute audio tape, *Show 526: The Role of a Veterinary Technician* (Internet: http://petworldradio.net/show-526-the-role-of-a-veterinary-technician/). List some of the duties of the technician in a veterinary clinic.

Enrichment Activities

1. View the video, *VetVidEpisode1EquineVeterinarianFinalDraft*, as a student interviews a practicing veterinarian to learn how college students can prepare to apply to veterinarian school as well as experiences in veterinarian school. Internet: https://www.youtube.com/watch?v=j5IyO4DIhTc
2. View the 2.5-minute video, *The Voices of our Profession: My Passion, My Profession*, from the American Veterinary Medical Association, in which veterinarians describe how they became interested in the profession. Internet: https://www.youtube.com/watch?v=w9s3b5dG_bI
3. View the four-minute video, *What You Need to Know About Paying for Veterinary School*, from the American Veterinary Medical Association to learn how to fund a veterinary education. Internet: https://www.youtube.com/watch?v=s43eQ_xa51c

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CHAPTER 35

Occupational Health and Environmental Science*

Key Terms

Board of Certified Safety Professionals (BCSP)
Centers for Disease Control and Prevention (CDC)
Certified environmental health technician (CEHT)
Certified safety professional (CSP)
Climate change analysts
Commissioned Officer Student Extern Training Program (COSTEP)
Compliance
Construction Health and Safety Technician (CHST) certification
Environmental chemists
Environmental health specialists
Environmental Protection Agency (EPA)
Environmental restoration planners
Ergonomists
Health physicists
Industrial or occupational hygienists
Industrial ecologists
Mine examiners
National Environmental Health Association (NEHA)
National Environmental Health Science & Protection Accreditation Council (EHAC)
National Institute of Occupational Safety and Health (NIOSH)
Occupational health and safety specialist
Occupational Health and Safety Technologist (OHST) certification
Occupational Safety and Health Administration (OSHA)
Registered environmental health specialists or sanitarians (REHS/RS)
Safety trained supervisor (STS)
U.S. Public Health Service (USPHS)

* All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition.* Washington, DC: U.S. Department of Labor; 2016

PROTECTING THE WORKER—PROTECTING THE ENVIRONMENT

Occupational health and safety specialists protect workers from accidents and injuries by monitoring **compliance** to safety laws and regulations in the workplace. Environmental scientists and specialists ensure the health of the population by protecting the air, water, soil, and food supply from toxins and pathogenic organisms.

Occupational health and safety professionals inspect worksites for compliance to safety regulations that protect workers from physical, chemical, or biological harm. For example, workers in poultry processing plants are at high risk for repetitive motion injuries and exposure to harmful disinfectant solutions and infectious agents. Safety measures include providing rest periods to avoid physical injury and wearing protective gear to prevent exposure to chemicals and pathogenic organisms.

Environmental scientists and specialists monitor air, soil, and water for toxins and pathogens harmful to the health of humans, plants, and animals. These specialists are first responders after a natural disaster such as a flood or an oil spill; they take samples of the water and locally grown foods to detect toxic chemicals or pathogens such as bacteria. If the water supply is contaminated, the public is advised to use bottled water until the water supply is safe to use.

For students interested in worker safety or the environment there are opportunities to work for the federal, state, or local government, for hospitals, or for consulting firms.

OCCUPATIONAL HEALTH AND SAFETY SPECIALISTS

Significant Points

- City, county, and state agencies are the major employers.
- The demand for occupational health and safety specialists is expected to be slower than average.
- Most jobs require a bachelor's degree, although some regulators learn the skill through on-the job training.

Work Description

Occupational health and safety specialists analyze many types of work environments and work procedures. Specialists inspect workplaces for compliance to regulations on safety, health, and the environment. They also design programs to prevent disease or injury to workers and damage to the environment.

Occupational health and safety specialists examine lighting, equipment, ventilation, and other conditions and materials in the workplace that could affect employee health, safety, comfort, and performance. Specialists seek to increase worker productivity by reducing absenteeism and equipment downtime. They also seek to save money by lowering insurance premiums and workers' compensation payments and by preventing government fines.

Some specialists develop and conduct employee safety and training programs. These programs cover a range of topics, such as how to use safety equipment correctly and how to respond in an emergency. In addition to protecting workers, specialists also work to prevent harm to property, the environment, and the public by inspecting workplaces for chemical, physical, radiological, and biological hazards. Specialists who work for governments conduct safety inspections of industry for compliance with government health and safety standards and regulations; when standards and regulations are not followed, specialists can impose a fine ranging from several thousand to millions of dollars.

Occupational health and safety specialists work with engineers and physicians to control or fix potentially hazardous conditions or equipment and to design and implement procedures to prevent potentially hazardous work conditions. Specialists investigate accidents and incidents to identify causes and to determine how they might be prevented in the future. They also work closely with occupational health and safety technicians to collect and analyze data in the workplace.

The tasks of occupational health and safety specialists vary by industry, workplace, and types of hazards affecting employees. The following are examples of types of occupational health and safety specialists:

Ergonomists consider the design of industrial, office, and other equipment to maximize workers' comfort, safety, and productivity. **Health physicists** work in locations that use radiation and radioactive material. They help to protect people and the environment from hazardous radiation used in research and medical treatment or from nuclear power plants, among other sources. **Industrial or occupational hygienists** identify workplace health hazards, such as lead, asbestos, noise, pesticides, and communicable diseases.

Work Environment

Occupational health and safety specialists work in a variety of settings, such as offices, factories, hospitals, oil fields, and mines. Their jobs often involve considerable fieldwork and travel. They may be exposed to strenuous, dangerous, or stressful conditions. Specialists use gloves, helmets, respirators, and other personal protective and safety equipment to minimize illness and injury (FIGURE 35.1).

In the federal government, specialists are employed by various agencies, including the **National Institute for Occupational Safety and Health (NIOSH)** and the **Occupational Safety and Health Administration (OSHA)**. Most large government agencies employ specialists to protect agency employees. In addition to working for governments, occupational health and safety specialists work in management, scientific, and technical consulting services; education services; hospitals; and manufacturing.

FIGURE 35.1 Occupational health and safety professionals promote the use of safety equipment to prevent injury of workers.
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Most occupational health and safety specialists work full time. Some specialists may work weekends or irregular hours in emergency situations.

Employment Opportunities

Occupational health and safety specialists held about 70,300 jobs in 2014; 29% worked for local, state, and federal governments, 16% worked in manufacturing, and 10% worked for consulting firms.

Educational and Legal Requirements

Occupational health and safety specialists typically need a bachelor's degree. Specialists usually receive on-the-job training in inspection procedures and regulations. Some states may require licensure for specific specialties.

Education and Training

Occupational health and safety specialists typically need a bachelor's degree in occupational health, safety, or a related scientific or technical field, such as engineering, biology, or chemistry.

For some positions, a master's degree is required in industrial hygiene, health physics, or a related subject. Typical courses include radiation science, hazardous materials management and control, risk communications, and respiratory protection. These courses may vary, depending on the specialty in which a student wants to work. For example, courses in health physics focus on topics that differ from those in industrial hygiene.

The **Board of Certified Safety Professionals (BCSP)** website lists qualified bachelor's and master's level programs in safety, health, and environmental practices.[1] Students who complete a degree that meets BCSP standards are eligible for Graduate Safety Practitioner (GSP) designation; GSP designation is one pathway to sit for the Certified Safety Professional exam.

Internships are not required, but employers may prefer to hire candidates who have participated in one. High school students interested in becoming occupational health and safety specialists should take courses in English, math, chemistry, biology, and physics.

Although occupational health and safety specialists learn standard laws and procedures in their formal education, they also need some on-the-job training for specific work environments. For example, a specialist who will inspect offices needs different on-the-job training than a specialist inspecting factories.

Licensure

Licensure is generally not required for occupational health and safety specialists although requirements vary by state and specialty.

Certification and Other Qualifications

Although certification is voluntary, many employers encourage it. Certification is available through several organizations, depending on the field in which the specialists work. Specialists must have graduated from an accredited educational program and have work experience to be eligible to take most certification exams. A **certified safety professional (CSP)** is a safety professional who has met education and experience standards, has successfully completed the certification exam, and is authorized by the Board of Certified Safety Professionals (BCSP) to use the CSP designation. Educational requirements are a bachelor's degree in any field or an associate's degree in safety and health plus experience. To keep their certification, specialists are usually required to complete periodic continuing education.[2]

Desirable qualities and skills for specialists are the ability to use advanced technology for testing toxic chemicals. Specialists need to be detail oriented, knowledgeable about safety standards and regulations, and able to recognize when standards are not being met. Problem-solving and communication skills are necessary to find solutions to unsafe working conditions and to communicate safety instructions and concerns to employees and managers. Physical stamina is also important because specialists often stand for long periods of time or work in settings which can be uncomfortable, such as underground mines or outdoor work sites in all kinds of weather.

Advancement

Specialists with advanced degrees and certification can expect to advance in the profession.

Employment Trends

Demand for occupational health and safety specialists is projected to grow slower than the average for all occupations.

Employment Change

Employment is projected to grow 4% from 2014 to 2024, slower than the average for all occupations. However, specialists will be needed to work in a wide variety of industries to ensure that employers are adhering to both existing and new regulations. For example, technological advances that allow manufacturing workers to use new machinery will require specialists to create and enforce procedures to ensure safe use of the machinery. In addition, a large number of currently practicing specialists are expected to retire over the coming decade, creating opportunities for new specialists.

The increased adoption of nuclear power as a source of energy may lead to job growth for specialists in that field. These specialists will be needed to maintain the safety of both the power plant workers and the surrounding environment.

Also, specialists will be necessary because insurance and workers' compensation costs have become a concern for many employers and insurance companies. An aging population is remaining in the workforce longer than past generations, and older workers usually have a greater proportion of workers' compensation claims.

Job Prospects

Job opportunities for individuals with advanced degrees are expected to be good. Candidates with certification may enjoy more job opportunities. Projected needs for occupational health and safety specialists are shown in TABLE 35.1.

Earnings

The median annual wage for occupational health and safety specialists was $69,210 in May 2014. TABLE 35.2 lists mean salaries by industry.

Related Occupations

Occupations with similar educational requirements and job responsibilities are health and safety engineers, environmental scientists and specialists, and occupational health and safety technicians.

TABLE 35.2 Mean Annual Salaries for Occupational Health and Safety Specialists, 2014[3]

Federal government	$78,030
Management, scientific, and technical consulting	$73,620
General medical and surgical hospitals	$66,460
Local government	$63,270
State government	$59,810

OCCUPATIONAL HEALTH AND SAFETY TECHNICIANS

Significant Points

- Major employers are local governments and technical consulting firms.
- Some jobs require an associate's degree; others provide on-the-job training.
- Demand for employees is average.

Work Description

Technicians work closely with, and often under the supervision of, occupational health and safety specialists to conduct tests and collect samples and measurements as part of workplace inspections. For example, they may collect and handle samples of dust, mold, gases, vapors, or other potentially hazardous materials. They also work with specialists to increase worker productivity by reducing worker absences and equipment downtime, which saves companies money by lowering insurance premiums and workers' compensation payments, preventing government fines.

Technicians test and identify work areas for potential health and safety hazards. They may examine and test machinery and equipment such as scaffolding and lifting de-

TABLE 35.1 Projections Data for Occupational Health and Safety Specialists, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Occupational health and safety specialists	70,300	73,100	2,800	4%

FIGURE 35.2 Occupational health and safety technicians monitor the safety at worksites.
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vices to be sure that they meet appropriate safety regulations. They may check that workers are using required protective gear, such as masks and hardhats. Technicians also check that hazardous materials are stored correctly (**FIGURE 35.2**).

Although all occupational health and safety technicians work to maintain the health of workers and the environment, their responsibilities vary by industry, workplace, and types of hazards affecting employees. For example, a technician may do testing at a waste-processing plant or may inspect the lighting and ventilation in an office setting. Both of these inspections are focused on maintaining the health of the workers and the environment.

The following are examples of types of occupational health and safety technicians. *Health physics technicians* work in industries that use radiation and radioactive material. by monitoring exposure to hazardous radiation and appropriate removal of waste. *Industrial or occupational hygiene technicians* examine the workplace for health hazards, such as exposure to lead, asbestos, pesticides, or infectious disease. ***Mine examiners*** inspect mines for proper air flow and potential health hazards such as the buildup of methane or other harmful gases.

Work Environment

Occupational health and safety technicians work in a variety of settings, such as offices, factories, and mines. Their jobs often involve considerable fieldwork in all kinds of weather and travel. Most work full time but may work irregular hours when there is an emergency such as extreme weather or a chemical spill.

TABLE 35.3 Distribution of Occupational Health and Safety Technicians by Industry, 2014

Industry	Percentage
Government	18%
Manufacturing	16%
Management, scientific, and technical consulting	10%
Hospitals	7%
Support activities for mining	6%

Employment Opportunities

There were 15,100 employed occupational health and safety technicians in 2014. The majority work for local manufacturing and consulting firms (**TABLE 35.3**).

Educational and Legal Requirements

Occupational health and safety technicians typically enter the occupation through one of two paths: Some technicians learn through on-the-job training; others enter with postsecondary education such as an associate's degree or certificate.

Education and Training

Employers typically require technicians to have at least a high school diploma. Some employers may prefer to hire technicians who have earned an associate's degree or certificate from a community college or vocational school. These programs typically take two years or less. They include courses in respiratory protection, hazard communication, and material handling and storage procedures. Postsecondary programs include instruction on standards, laws, and procedures; however, some on-the-job training is usually required to familiarize the technician with specific work environments.

On-the-job training covers specific laws, inspection and testing procedures, and recognizing hazards. The length of training varies with the employee's level of experience, education, and the industry in which he or she works. Some technicians enter the occupation through a combination of related work experience and training. They may take on health and safety tasks at the company where they are employed at the time. For example, an employee may volunteer to complete annual workstation inspections for an office where he or she already works.

Licensure

Licensure is not required for occupational health and safety technicians; however, certification may be required by employers.

Certification and Other Qualifications

Certification is not required to become an occupational health and safety technician; however, many employers encourage it. To apply for certification, technicians must have a high school diploma, related on-the-job experience, and pass a standardized health and safety exam. The BCSP offers three certifications at the technician level. **Construction health and safety technician (CHST) certification** requires the applicant to have specific education or experience in construction safety. **Occupational health and safety technologist (OHST) certification** is designed for workers who perform occupational health and safety tasks as part of their job duties. **Safety trained supervisor (STS)** certification is for first-line supervisors or managers and requires one year of supervisory experience.

Desirable qualities and skills for occupational health and safety technicians are the ability to use computers and complex testing equipment. Attention to detail and problem-solving skills are important to recognize when standards and regulations are not being met, and to make the necessary changes to meet these standards. Good communication skills are necessary when working with specialists and other employees when collecting samples of possible toxins.

Advancement

Occupational health and safety technicians can become occupational health and safety specialists by earning a bachelor's or advanced degree. Technicians with knowledge in more than one area of health and safety along with knowledge of general business functions will have the best prospects for advancement

Employment Trends

Employment is projected to grow about as fast as the average for all occupations.

Employment Change

Employment of occupational health and safety technicians is projected to grow 9% from 2014 to 2024, about as fast as the average for all occupations. Increased adoption of nuclear power as a source of energy may lead to job growth as new regulations and precautions need to be enforced. Technicians will be needed to collect and test data to maintain the safety of both the workers and the environment. Insurance and workers' compensation costs have become a concern for many employers and insurance companies. Occupational health and safety technicians will be needed to work with occupational health and safety specialists in maintaining safety for all workers.

Job Prospects

Technicians with knowledge in more than one area of health and safety as well as general business functions will have better job prospects. Technicians can complete many routine tasks with little or no supervision. As a result, some employ-

TABLE 35.4 Projections Data for Occupational Health and Safety Technicians, 2014–2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Occupational health and safety technicians	15,100	16,500	1,400	9%

TABLE 35.5 Mean Annual Salaries for Occupational Health and Safety Technicians, 2014[3]

Support activities for mining	$58,420
Local government	$49,040
Management, scientific, and technical consulting	$48,260
Colleges, universities, and professional schools	$48,210
General medical and surgical hospitals	$45,600

ers may operate with more technicians because they are more cost effective than specialists. TABLE 35.4 lists employment projections for occupational health and safety technicians.

Earnings

The median annual wage for occupational health and safety technicians was $48,120 in May 2014. TABLE 35.5 lists mean salaries for industries that employ technicians.

Similar Occupations

Occupations with similar education and experience requirements and job responsibilities are construction and building inspectors, environmental science and protection technicians, fire inspectors and investigators, and occupational health and safety specialists.

ENVIRONMENTAL SCIENTISTS AND SPECIALISTS

Significant Points

- Local, state, and federal governments, consulting firms, and architecture and engineering firms are the major employers.
- Most jobs require a bachelor's degree in environmental science or other science.
- Demand for jobs will be greater than average.

Work Description

Environmental health is a branch of public health concerned with all aspects of the natural and built environment that may affect human health. An environmental health specialist inspects environmental health systems to make sure they are in compliance with local, state, and federal regulations established to keep citizens safe and healthy. They use their knowledge of the natural sciences to protect the environment and human health. They may clean up polluted areas, advise policy makers, or work with industry to reduce waste.

These specialists analyze environmental problems and develop solutions. For example, many specialists work to reclaim lands and waters that have been contaminated by pollution. Others assess the risks that new construction projects pose to the environment and make recommendations to governments and businesses on how to minimize the environmental impact of these projects. Some specialize in food safety and do inspections of food processing plants or restaurants. Others may do research and provide advice on manufacturing practices, such as advising against the use of chemicals that are known to harm the environment (FIGURE 35.3).

FIGURE 35.3 Environmental scientists monitor the safety of the food supply.
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The federal government and many state and local governments have regulations to ensure that there is clean air to breathe, safe water to drink, safe food to eat, and that there are no hazardous materials in the soil. The regulations also place limits on development, particularly near sensitive ecosystems such as wetlands. Many environmental scientists and specialists work for the government to ensure that these regulations are followed. Others work for consulting firms that help companies comply with regulations and policies. Some environmental scientists and specialists focus on environmental regulations that are designed to protect people's health, while others focus on regulations designed to minimize society's impact on the ecosystem. The following are examples of types of specialists:

Climate change analysts study effects on ecosystems caused by the changing climate. They may do outreach education activities and grant writing typical of scientists. **Environmental restoration planners** assess polluted sites and determine the cost and activities necessary to clean up the area (FIGURE 35.4).

Environmental health specialists study how environmental factors impact human health. They investigate potential environmental health risks, such as soil and water contamination caused by nuclear weapons manufacturing. **Industrial ecologists** work with industry to increase the efficiency of their operations and thereby limit the impacts these activities have on the environment. They analyze costs and benefits of various programs, as well as their impacts on ecosystems.

Other environmental scientists do work and receive training that is similar to that of other physical or life scientists, but focus on environmental issues. **Environmental chemists** are an example; they study the effects that various chemicals have on ecosystems. For example, they look at how acids affect plants, animals, and people and work in waste management and remediation of contaminated soils, water, and air.

Work Environment

Environmental scientists and specialists work in offices and laboratories. Some may spend time in the field gathering data and monitoring environmental conditions firsthand, but this work is much more likely to be done by environmental science and protection technicians.

Fieldwork can be physically demanding, and environmental scientists and specialists may work in all types of weather. Specialists may need to travel to meet with clients or present research at conferences. Most environmental scientists and specialists work full time. They may have to work long or irregular hours when working in the field.

Employment Opportunities

Environmental scientists and specialists held about 94,600 jobs in 2014. Most environmental scientists and specialists work for federal, state, or local governments (35%), private consulting firms (23%), or for engineering firms (10%). Federal agencies that employ environmental scientists and specialists include the **Environmental Protection Agency (EPA), U.S. Public Health Services (USPHS)**, and the **Centers for Disease Control and Prevention (CDC)**.

Education and Legal Requirements

Most jobs for environmental scientists and specialists require a bachelor's degree in environmental science or another science field such as biology, chemistry, or engineering.

FIGURE 35.4 Environmental scientists work with industry to reduce air pollution.

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Education and Training

For most entry-level jobs, environmental scientists and specialists must have a bachelor's degree in environmental science or a science-related field, such as biology, chemistry, physics, geosciences, or engineering. However, a master's degree may be needed for advancement. Environmental scientists and specialists who have a doctoral degree make up a small percentage of the occupation, and this level of training is typically needed only for the relatively few postsecondary teaching and basic research positions.

A bachelor's degree in environmental science offers a broad approach to the natural sciences. Students typically take courses in biology, chemistry, geology, and physics. Students often take specialized courses in hydrology, waste management, and fluid mechanics as part of their degree as well. Classes in environmental policy and regulation are also beneficial. Students who want to reach the PhD level and have a career in academia or as an environmental scientist doing basic research may find it advantageous to major in a more specific natural science such as chemistry, biology, physics, or geology, rather than the broader environmental science degrees. The **National Environmental Health Science & Protection Accreditation Council (EHAC)** is the accrediting agency for environmental health degree programs. As of 2015, there were 30 accredited undergraduate and nine graduate programs in the U.S.[4]

Students should look for opportunities, such as classes and internships, that allow for work with computer modeling, data analysis, and geographic information systems. Students with experience in these programs will be the best prepared to enter the job market.

Licensure

Many states recognize graduation from an EHAC-accredited program as the standard needed to become a registered environmental health specialist or sanitarian. Registration is required for some positions with the federal government. For example, only students from accredited programs are eligible to participate in the **Commissioned Officer Student Extern Training Program (COSTEP)**; graduation from an accredited program is a requirement to enter the U.S. Public Health Service.[4]

Certification and Other Qualifications

Registration and certification in different areas of environmental health are available for those wishing to be more competitive in the job market. The **National Environmental Health Association (NEHA)** offers certification for workers in environmental health. The most common is the **Registered Environmental Health Specialist or Registered Sanitarian (REHS/RS)** credential. Workers with this credential have the skills to manage an emergency response, sewage, hazardous materials, and vector control (managing mammals, birds, and insects that transmit disease pathogens.[5] For more about credentials, go to *Additional Information* at the end of the chapter.

Desirable qualities and skills for specialists are analytical and problem-solving skills to evaluate data and find solutions to environmental pollution. Excellent communication skills are necessary to present data, explain results, and write technical reports. Interpersonal skills are also important, since specialists work with teams of other scientists, engineers, and technicians; also, results are presented to business owners or plant managers who can be defensive. Scientists spend a lot of time alone analyzing data and preparing reports, so self-discipline is important.

Advancement

Environmental scientists and specialists often begin their careers as field analysts, research assistants, or technicians in laboratories and offices. As they gain experience, they earn more responsibilities and autonomy and may supervise the work of technicians or other scientists. Eventually, they may be promoted to project leader, program manager, or other management or research position. Some environmental scientists and specialists begin their careers as scientists in related occupations, such as hydrology or engineering, and then move into the more interdisciplinary field of environmental science. Others work as researchers or faculty at colleges and universities.

Employment Trends

Employment of environmental scientists and specialists is projected to grow faster than the average for all occupations.

Employment Change

Employment of environmental scientists and specialists is projected to grow 11% from 2014 to 2024, faster than the average for all occupations. Heightened public interest in the hazards facing the environment, as well as the increasing demands placed on the environment by population growth, is projected to spur demand for environmental scientists and specialists.

Most employment growth for environmental scientists and specialists is projected to be in private consulting firms that help clients monitor and manage environmental concerns and comply with regulations. However, most jobs will remain concentrated in the various levels of government and closely related industries, such as publicly funded universities, hospitals, and national research facilities.

More businesses are expected to consult with environmental scientists and specialists in the future to help them minimize the impact their operations have on the environment. For example, environmental consultants help businesses to develop practices that minimize waste, prevent

TABLE 35.6 Projections Data for Environmental Scientists and Specialists, 2014 to 2024

Occupational Title	Employment, 2014	Projected Employment, 2024	Change, 2014–2024	
			Number	Percentage
Environmental scientists and specialists	94,600	104,800	10,200	11%

pollution, and conserve resources. Other environmental scientists and specialists are expected to be needed to help planners develop and construct buildings, utilities, and transportation systems that protect natural resources and limit damage to the land.

Job Prospects

Environmental scientists and specialists should have good job opportunities. In addition to growth, many job openings will be created by scientists who retire, advance to management positions, or change careers. TABLE 35.6 shows some job projections data from the U.S. Department of Labor.

Earnings

The median annual wage for environmental scientists and specialists was $66,250 in May 2014.[1] TABLE 35.7 shows salaries for the major employers, including the government and consulting services.

TABLE 35.7 Mean Annual Salaries for Environmental Scientists and Specialists, 2014[3]

Federal government	$98,830
Management, scientific, and technical consulting	$75,540
Architecture and engineering services	$70,960
Local government	$64,760
State government	$60,460

Related Occupations

Some occupations that have similar educational requirements and job responsibilities are agricultural and food scientists, atmospheric scientists, geoscientists, occupational health and safety specialists, chemists, environmental engineers, and zoologists and wildlife biologists.

ENVIRONMENTAL SCIENCE AND PROTECTION TECHNICIANS

Significant Points

- Major employers are state and local governments, consulting firms, and architecture and engineering firms.
- Most jobs require an associate's degree.
- Demand for these technicians is expected to be higher than average.

Work Description

Environmental science and protection technicians monitor the environment and investigate sources of pollution and contamination, including those affecting health.

Many environmental science and protection technicians work under the supervision of environmental scientists and specialists, who direct the technicians' work and evaluate their results. In addition, they often work on teams with scientists, engineers, and technicians in other fields to solve complex problems related to environmental degradation and public health. For example, they may work on teams with geoscientists and hydrologists to manage the cleanup of contaminated soils and ground water around an abandoned bomb manufacturing site.

Most environmental science and protection technicians work for state or local governments, testing laboratories, or consulting firms. In *state and local governments*, environmental science and protection technicians spend a lot of time inspecting businesses and public places, and investigating complaints related to air quality, water quality, and food safety. Sometimes they may be involved with enforcement of environmental regulations. They may protect the environment and people's health by performing environmental impact studies of new construction or by evaluating the environmental health of sites that may contaminate the environment, such as abandoned industrial sites.

Environmental science and protection technicians work in testing laboratories collecting and tracking samples, and performing tests that are often similar to what is done by *chemical technicians, biological technicians,* or *microbiologists.* However, the work done by *e*nvironmental science and

protection technicians focuses on topics that are directly related to the environment and how it affects human health.

In *consulting firms*, environmental science and protection technicians help clients monitor and manage the environment and comply with regulations. For example, they help businesses develop cleanup plans for contaminated sites, and they recommend ways to reduce, control, or eliminate pollution. Also, environmental science and protection technicians conduct feasibility studies for, and monitor the environmental impact of, new construction projects. Environmental science and protection technicians typically specialize in either laboratory testing or in fieldwork and sample collection. However, it is common for laboratory technicians to occasionally collect samples from the field, and for fieldworkers to do some work in a laboratory.

Work Environment

Technicians work in laboratories, offices, and the field. Fieldwork offers a variety of settings. For example, a technician may investigate an abandoned manufacturing plant, or work outdoors testing the water quality of lakes and rivers. They may work around streams and rivers monitoring the levels of pollution caused by runoff from agricultural fields, cities, and landfills, or they may have to use the crawl spaces under a house to neutralize natural health risks such as radon. While working outdoors, they may be exposed to adverse weather conditions (**FIGURE 35.5**).

In the field, environmental science and protection technicians spend most of their time on their feet, which can be physically demanding. They also may need to carry and set up testing equipment, which can involve some heavy lifting and frequent bending and crouching.

Environmental science and protection technicians typically work full time. In some cold climates, the ground may freeze, thus limiting the ability to take samples. This may cause some workers to work seasonally. They may also need to travel to meet with clients or to perform fieldwork. This may occasionally require technicians to work long or irregular hours.

Employment Opportunities

Environmental science and protection technicians held about 36,200 jobs in 2014. Most worked for state or local governments (26%), consulting firms (26%), testing laboratories (12%), or engineering firms (6%).

Education and Legal Requirements

Environmental science and protection technicians typically need an associate's degree or two years of postsecondary education, though some positions may require a bachelor's degree.

Education and Training

Environmental science and protection technicians typically need an associate's degree in environmental science, environmental health, public health, or a related degree. Because of the wide range of tasks, environments, and industries in which these technicians work, there are jobs that do not require postsecondary education, and others that require a bachelor's degree.

FIGURE 35.5 Environmental science and protection technicians sample and test water for toxins.

© cubephoto/Shutterstock

A background in natural sciences is important for environmental science and protection technicians. Students should take courses in chemistry, biology, geology, and physics. Coursework in mathematics, statistics, and computer science also is useful because technicians routinely do data analysis and modeling.

Many schools offer internships and cooperative-education programs, which help students gain valuable experience while attending school. Internships and cooperative-education experience can enhance the students' employment prospects.

Many technical and community colleges offer programs in environmental studies or a related technology, such as remote sensing or geographic information systems (GIS). Associate's degree programs at community colleges traditionally are designed to provide easy transfer to bachelor's degree programs at colleges and universities.

Licensure

In some states, environmental science and protection technicians need a license to do certain types of environmental and health inspections. For example, some states require licensing for technicians who test buildings for radon. Licensure requirements vary by state but typically include minimum levels of education and experience and a passing score on an exam.

Certification and Other Qualifications

Environmental science and protection technicians can become certified as an **environmental health technician (CEHT)** by the National Environmental Health Association. Requirements are either an associate's degree in the environmental health field or a high school diploma plus two years of work experience and successful completion of the certification exam.

Desirable qualities and skills for environmental science and protection technicians are the ability to carry out a wide variety of laboratory and field tests with accuracy. Critical-thinking skills are necessary to determine the best way to address environmental hazards. Good communication skills are necessary to work with specialists and other employees when collecting samples of possible toxins. Excellent listening and writing skills are necessary to follow instructions and communicate results in written reports. Interpersonal skills are needed to work with scientists and other technicians and managers and others at the worksite.

Advancement

Job candidates with an associate's degree and laboratory experience should have the best job opportunities.

Employment Trends

Public interest in the environment is expected to increase demand for careers in environmental science.

Employment Change

Employment of environmental science and protection technicians is projected to grow 9% from 2014 to 2024, faster than the average for all occupations. Heightened public interest in the hazards facing the environment, as well as the increasing demands placed on the environment by population growth, are expected to spur demand for environmental science and protection technicians.

Most employment growth for environmental science and protection technicians is projected to be in consulting firms. More businesses and governments are expected to use these firms in the future to help them monitor and manage the environment and comply with regulations.

Job Prospects

Environmental science and protection technicians should have good opportunities for employment. Job candidates with an associate's degree and laboratory experience should have the best opportunities.

Earnings

The median annual wage for environmental science and protection technicians was $42,190 in May 2014; the mean annual wages in the top five industries employing these technicians are shown in TABLE 35.8.

TABLE 35.8 Mean Annual Salaries for Environmental Scientists and Protection Technicians, 2014[3]

Local government	$48,210
Management, scientific, and technical consulting	$43,570
State government	$43,350
Architecture and engineering services	$43,130
General medical and surgical hospitals	$35,640

ADDITIONAL INFORMATION

For more information about occupations in safety, a list of safety and related academic programs, and credentialing, visit:

- Board of Certified Safety Professionals, 2301 W. Bradley Avenue Champaign, IL 61821. Internet: http://www.bcsp.org/

For information about undergraduate and graduate degree programs in environmental health science and scholarship opportunities, contact:

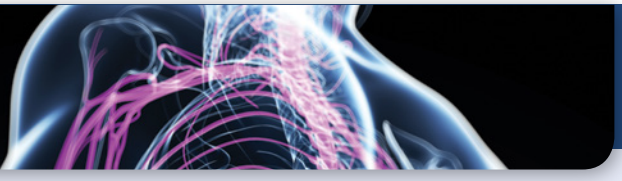
- Association of Environmental Health Academic Programs (AEHAP), P.O. Box 66057, Burien, WA 98166. Internet: http://www.careersenvhealth.com/why.php
- National Environmental Health Science & Protection Accreditation Council (EHAC), P.O. Box 66057, Burien, WA 98166. Internet: http://www.ehacoffice.org

For information about certification and credentialing options and requirements for environmental health scientists, contact:

- National Environmental Health Association, 720 S. Colorado Blvd, Suite 1000-N, Denver, CO 80246. Internet: http://www.neha.org/professional-development/credentials

Information on obtaining an internship or job with the federal government can be obtained by visiting:

- USAJobs. *Pathways for Students and Recent Graduates to Federal Careers*. Internet: https://www.usajobs.gov/StudentsAndGrads



LEARNING PORTFOLIO

Issues for Discussion

1. Watch the one-minute video, *Know Your Rights!* from Occupational Health and Safety Regulation (OSHA) (Internet: https://youtu.be/MjnWMQeufI0). List the industries represented in the video and worker safety concerns for that industry.
2. Go to the National Institute for Occupational Safety and Health (NIOSH) website (Internet: http://www.cdc.gov/niosh/) and review the list of industries and occupations. Choose one industry/occupation from the list and review the sources of worker injury or illness for that particular industry/occupation. Are there specific recommendations for the industry to protect the worker?
3. Watch the two-minute video, *Environmental Health Careers*, from the Association of Environmental Health Academic Programs (AEHAP) (Internet: https://vimeo.com/50335987). Summarize the components of the environment that are monitored by environmental health specialists to protect the health of all humans.
4. Go to the Environmental Protection Agency website and link to Compliance and Enforcement and then to Civil Cases and Settlements. Choose one case to review. What industry was involved in the case? What standard or regulation was not followed? What was the penalty? Internet: http://cfpub.epa.gov/enforcement/cases/

Enrichment Activities

1. Review profiles of two environmental health specialists that are employed by the federal government posted on the Association of Environmental Health Academic Programs web page. Internet: http://www.careersenvhealth.com/meet.php
2. Listen to the seven-minute podcast from the National Institutes of Environmental Health Sciences to learn more about jobs available in the environmental health sciences. Internet: http://www.niehs.nih.gov/research/supported/dert/programs/peph/podcasts/careers/index.cfm
3. Watch the two-minute video, *Preventing Mercury Exposure in Florida* from the CDC Environmental Public Health Tracking Program (Internet: http://ephtracking.cdc.gov/showTrackingInAction.action). Who is most susceptible to negative health effects of mercury?
4. Watch the two-minute video, *Environmental Health Careers*, from the Association of Environmental Health Academic Programs (AEHAP) (Internet: https://vimeo.com/50335987. Summarize the components of the environment that are monitored by environmental health specialists to protect the health of all humans. Go to the Environmental Protection Agency (EPA) website to learn more about climate change and programs of the EPA to address this problem. Internet: http://www3.epa.gov/climatechange/

References

1. Board of Certified Safety Professionals. *Graduate Safety Practitioner*. Internet: http://www.bcsp.org/Portals/0/Assets/DocumentLibrary/BCSP_GSP_QAP_List.pdf
2. Board of Certified Professionals. *Certifications*. Internet: http://www.bcsp.org/Certifications
3. Bureau of Labor Statistics. *Occupational Employment and Wages — May 2014*. Washington, DC: U.S. Department of Labor; 2014. Internet: http://www.bls.gov/oes/#data
4. Association of Environmental Health Academic Programs (AEHAP). *Find an Environmental Health Degree Program*. Internet: http://www.careersenvhealth.com/degree.php
5. National Environmental Health Association. Credentials. Internet: http://www.neha.org/professional-development/credentials

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APPENDIX A

Salaries for Health Professionals

PROFESSION	MEDIAN YEARLY SALARY
Animal care and service worker	$20,610
Athletic trainer	$43,370
Audiologist	$73,060
Cardiovascular technologist and technician	$54,330
Community health worker	$34,870
Dentist	$154,640
Dental assistant	$36,260
Dental hygienist	$71,520
Dental laboratory technician	$36,830
Dietetic technician	$25,780
Dietitian/nutritionist	$56,950
Environmental scientist and specialist	$66,250
Environmental science and protection technician	$42,190
Emergency medical technician (paramedic)	$31.700
Exercise physiologist	$46,270
Genetic counselor	$67,500
Health educator	$50,430
Health information manager	$73,077*
Health information technician	$35,900
Home health aide	$21,380

All information in this chapter, unless otherwise indicated, was obtained from Bureau of Labor Statistics. *Occupational Outlook Handbook 2016–2017 Edition*. Washington, D.C.: U.S. Department of Labor; 2016.

PROFESSION	MEDIAN YEARLY SALARY
Massage therapist	$37,180
Medical appliance technician	$35,580
Medical assistant	$29,960
Medical and clinical laboratory technician	$38,370
Medical and clinical laboratory technologist	$59,430
Medical and health service manager	$92,810
Medical librarian	$66,622†
Medical transcriptionist	$34,750
Mental health counselor	$48,850
Nuclear medicine technologist	$72,100
Nurse, practical/vocational (LPN/LVN)	$42,490
Nurse, registered	$66,640
Nursing assistant	$25,100
Occupational health and safety specialist	$69,210
Occupational health and safety technician	$48,120
Occupational therapist	$78,810
Occupational therapy aide	$26,550
Occupational therapy assistant	$52,300
Ophthalmic medical technician	$28,890
Optician, dispensing	$34,280
Optometrist	$101,410
Orthotists and prosthetists	$64,040
Pharmacist	$120,950
Pharmacy technician	$29,810
Phlebotomist	$30,670
Physical therapist	$82,390
Physical therapy aide	$24,650
Physical therapy assistant	$54,410
Physician/surgeon	$187,200
Physician assistant	$95,820
Podiatrist	$120,700
Psychiatric technician	$31,130
Psychologist	$70,700
Radiation therapist	$80,090
Radiology technologist	$55,870
Recreational therapist	$44,000

PROFESSION	MEDIAN YEARLY SALARY
Respiratory therapist	$56,730
Social and human service assistant	$29,970
Social worker	$45,500
Sonographers, diagnostic, medical	$67,530
Speech-language pathologist	$71,550
Surgical technologist	$43,350
Veterinarian	$87,590
Veterinarian technologist or technician	$31,070

Notes: (1) Only salaries of major health professions are shown. Space limitation does not permit the listing of all health and health-related jobs. (2) Earnings vary with education, experience, level of responsibility, performance, industry, amount of unionization, geographic area, specialized services rendered, and whether the practitioner is self-employed or part-time. (3) No attempt is made to show variance by specialties. (4) Salaries shown are income averages and change rapidly over time. (5) For details, updates, and data on unlisted health professions, consult the Additional Information section for each profession in the chapters.

Use the resources and Internet websites where applicable.

*American Health Information Management Association, *Salary Survey*, 2014.

†Medical Library Association, *Salary Survey*, 2012.

APPENDIX B

Sources of Career Information

This appendix is provided for student use from the Bureau of Labor Statistics/U.S. Department of Labor online publications, *Occupational Outlook Handbook, 2016–2017 Edition* and *Career Outlook.* Listed below are several places to begin collecting information on careers and job opportunities.

Like any major decision, selecting a career involves a lot of fact finding. Fortunately, some of the best informational resources are easily accessible. You should assess career guidance materials carefully. Information that seems out of date or that glamorizes an occupation—overstates its earnings or exaggerates the demand for workers, for example—should be evaluated with skepticism. Gathering as much information as possible will help you make a more informed decision. Use many different sources of information including some of the following.

PEOPLE YOU KNOW

One of the best resources can be your friends and family. They may answer some questions about a particular occupation or put you in touch with someone who has experience in the field. This personal networking can be invaluable in evaluating an occupation or an employer. These people will be able to tell you about their specific duties and training, as well as what they did or did not like about a job. Your contacts who have worked in an occupation locally also may be able to give you a recommendation and get you in touch with specific employers.

EMPLOYERS

This is the primary source of information on specific jobs. Employers often post lists of job openings and application requirements, including the exact training and experience required, starting wages and benefits, and advancement opportunities and career paths.

INFORMATIONAL INTERVIEWS

People already working in a particular field often are willing to speak with people interested in their field. An informational interview will allow you to get good information from experts in a specific career without the pressure of a job interview. These interviews allow you to determine how a certain career may appeal to you while helping you build a network of personal contacts. Another way to learn more about different careers and work settings is to volunteer in a hospital, clinic, diagnostic or research laboratory, or community agency.

PROFESSIONAL SOCIETIES, TRADE GROUPS, AND LABOR UNIONS

These groups have information on an occupation or various related occupations with which they are associated or actively represent, such as training requirements, earnings, and listings of local employers. These groups may train members, or they may be able to put you in contact with organizations or individuals who perform such training. One valuable source for finding organizations associated with occupations is the *Encyclopedia of Associations*, an annual publication that lists trade associations, professional societies, labor unions, and other organizations.

GUIDANCE AND CAREER COUNSELORS

Counselors can help you make choices about which careers might suit you best. They can help you establish what occupations suit your skills by testing your aptitude for various types of work and determining your strengths and interests. Counselors can help you evaluate your options and search for a job in your field, or help you select a new field altogether. They can also help you determine which educational or training institutions best fit your goals, and then assist you in finding ways to finance them. Some counselors offer other services such as interview coaching, résumé building, and help in filling out various forms. Counselors in secondary schools and postsecondary institutions may arrange guest speakers, field trips, or job fairs.

You can find guidance and career counselors at many institutions, including

- 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

When using a private counselor, check to see that the counselor is experienced. One way to do so is to ask people who have used the counselor's services in the past. Counselors affiliated with high schools, colleges, and state employment services usually do not charge for services. However, private counseling agencies and counselors in private practice typically charge a fee. The National Board of Certified Counselors and Affiliates is an institution that accredits career counselors. To verify the credentials of a career counselor and to find a career counselor in your area, contact:

- National Board for Certified Counselor and Affiliates, 3 Terrace Way, Greensboro, NC 27403. Internet: http://www.nbcc.org/directory/FindCounselors.aspx

POSTSECONDARY INSTITUTIONS

Colleges, universities, and other postsecondary institutions typically put a lot of effort into helping place their graduates in good jobs, because the success of their graduates may indicate the quality of their institution and may affect the institution's ability to attract new students. Postsecondary institutions commonly have career centers with libraries of information on different careers, listings of related jobs, and alumni contacts in various professions. Career centers frequently employ career counselors who generally provide their services only to their students and alumni. Career centers can help you build your résumé, find internships that can lead to full-time positions, and tailor your course selection or program to make you a more attractive job applicant.

LOCAL LIBRARIES

Libraries can be an invaluable source of information. Because most areas have libraries, they can be a convenient place to look for information. Also, many libraries provide free access to the Internet and e-mail, although many libraries require registering for a time slot for using the Internet. Libraries may have information on job openings, locally and nationally, potential contacts within occupations or industries, colleges and financial aid, vocational training, individual businesses or careers, and writing résumés. Libraries frequently have subscriptions to various trade magazines that can provide information on occupations and industries. Your local library also may have video materials. These sources often have references to organizations that can provide additional information about training and employment opportunities. Some libraries offer programs to aid in the job search. If you need help getting started or finding a resource, ask your librarian for assistance.

INTERNET RESOURCES

A wide variety of career information is easily accessible on the Internet. Many online resources include job listings, résumé posting services, and information on job fairs, training, and local wages. Many employment services, such as American Job Centers, offer free, unlimited Internet use. Many of the resources listed elsewhere in this section list Internet sites that include valuable information on potential careers. No single source contains all information on an occupation, field, or employer; therefore, you will likely need to use a variety of sources.

Company Websites

Many companies also list job openings on their sites, so search for positions that fit your skills, interests, and experience. Even if there are no current openings that fit your needs, some companies accept résumé or applications to keep on file for when a position does become available.

Job Boards

The Internet abounds with sites that host job listings. Many of these sites allow you to upload and submit your résumé to employers electronically. You can also set up an account and include other kinds of information about yourself, such as any certifications. Employers can then search your résumé and contact you when there are job opportunities. Some sites also allow you to set up a list of keywords that describe the types of jobs in which you are interested. These sites will generate an email when there are positions that match your keywords. Some job boards require a paid membership before

you can apply for jobs or search all of their listings; however, since many job boards are free, weigh the costs against the benefits of paying for a job board's services.

Social Networking

Keep your social networking profiles current. And be sure that your social media profiles contain only appropriate content that you want prospective employers to see. Use privacy settings to prevent other users from identifying you in photos or tagging your comments. Monitor social networking sites and remove anything that could appear unprofessional. Use these sites to connect with friends, family, and current, former, and potential colleagues who might be helpful to you in your job search.

Also use social networking sites to connect with companies that interest you. Reach out to employees and ask them if they'd be willing to talk to you about their work. Many companies post job listings on their social networking pages. In addition, you may want to join discussion groups related to the industries that interest you, but remember to stay professional in everything you post.

Online Sources from the U.S. Department of Labor

The Bureau of Labor Statistics within the U.S. Department of Labor website includes the *Occupational Outlook Handbook* with information about hundreds of occupations, including what the work is like, educational and training requirements, salaries, and professional organizations (Internet: http://www.bls.gov/ooh/). *Career Outlook,* a newsletter found on the Bureau of Labor Statistics website, has a variety of articles about occupations and career planning (Internet: http://www.bls.gov/careeroutlook/). The U.S. Department of Labor has a number of other resources including the following:

- **CareerOneStop** centers offer employment and training opportunities, skills assessments, and job seeking help. Internet: http://www.careeronestop.org/
- **mySkills myFuture** maintained by CareerOneStop, can help you match your past skills and experience with occupations. Internet: http://www.myskillsmyfuture.org/
- **American Job Centers** are located throughout the U.S. and offer job listings and information for jobseekers. Internet: http://jobcenter.usa.gov/find-a-job
- **Employment and Training Administration** features information about employment and training opportunities, including for veterans. Internet: https://www.doleta.gov/
- The **Office of Disability Employment Policy** offers a return-to-work toolkit for employers and for people with a disability. Internet: http://www.dol.gov/odep/
- **O*NET** has a database with information about hundreds of occupations. The database is searchable by skills, education level, job outlook, and other keywords. Internet: https://www.onetonline.org/
- Your **State Labor Market Information** may have career tools and data specific to your area. Internet: http://www.bls.gov/bls/ofolist.htm

RESOURCES FOR SPECIFIC GROUPS

The U.S. Equal Employment Opportunity Commission (EEOC) is responsible for enforcing federal laws that make it illegal to discriminate against a job applicant or an employee because of the person's race, color, religion, sex (including pregnancy), national origin, age (40 or older), disability, or genetic information. The laws apply to all types of work situations, including hiring, firing, promotions, harassment, training, wages, and benefits (Internet: http://www.eeoc.gov).

Organizations described below provide information designed to help specific groups of people. Consult directories in your library's reference center or a career guidance office for information on additional organizations.

Workers with Disabilities

A comprehensive federal website of disability-related resources is accessible at:

- Disability.gov. Internet: http://www.disability.gov

Information on employment opportunities, transportation, and other considerations for people with a wide variety of disabilities is available from:

- National Organization on Disability, 77 Water Street, Suite 204, New York, NY 10005. Internet: http://www.nod.org/

For information on workplace accommodations for people with disabilities, contact:

- Job Accommodation Network (JAN), P.O. Box 6080, Morgantown, WV 26506. Internet: http://www.jan.wvu.edu

Workers Who Are Blind

Information on the free national reference and referral service for the blind can be obtained by contacting:

- American Federation for the Blind, 2 Penn Plaza, Suite 1102, New York, NY 10121. Telephone: 1-800-232-5463. Internet: http://www.afb.org/info/living-with-vision-loss/for-job-seekers/12

Older Workers

Internet sites which specialize in supporting the older worker include the following:

- Senior Community Service Employment Program. U.S. Department of Labor. Employment and Training

Administration. Internet: https://www.doleta.gov/seniors/

- AARP. Internet: http://www.aarp.org/work/employee-benefits/best_employers/
- National Council on the Aging, 251 18th Street South, Suite 500, Arlington, VA 22202. Internet: http://www.ncoa.org
- Retirement Jobs.com. Internet: http://retirementjobs.com/search/
- National Caucus and Center on Black Aging, Inc., Senior Employment Programs, 1220 L St. NW, Suite 800, Washington, DC 20005. Internet: http://www.ncba-aged.org

Veterans

Contact the nearest regional office of the U.S. Department of Labor's Veterans Employment and Training Service. Internet: http://www.dol.gov/vets/

Contact the U.S. Veterans Administration for programs to transition to civilian employment. Internet: http://www.benefits.va.gov/benefits/

- Vets.gov. Veterans Employment Center" My Next Move. Internet: http://www.mynextmove.org/vets/profile/ext/vec/

Women

- Department of Labor, Women's Bureau, 200 Constitution Ave. NW, Washington, DC 20210. Internet: http://www.dol.gov/wb

OBTAINING JOBS WITH THE FEDERAL GOVERNMENT

Many jobs for healthcare workers and health-related professions are available with the federal government.

Office of Personnel Management

Information on obtaining civilian positions within the federal government is available from the U.S. Office of Personnel Management through USA Jobs, the federal government's official employment information system. Use this resource for locating and applying for job opportunities with the federal government including the Department of Veteran Affairs.

- USA Jobs: Internet: http://www.usajobs.opm.gov

The Office of Personnel Management offers programs for students and new graduates to prepare for government positions:

- Pathways for students and recent graduates to federal careers. Internet: http://www.opm.gov/HiringReform/Pathways/

Military

The military employs and has information on hundreds of occupations either as an enlisted service member or officer. Information is available on tuition assistance programs, which provide money for school and educational debt repayments. Your local military recruiting office can provide information on military service. Also read Military Careers in the *Occupational Outlook Handbook, 2016–2017* to learn more about job opportunities in the Armed Forces. You can also find more information on careers in the military at:

- Today's Military. Internet: http://www.todaysmilitary.com

APPENDIX C

How to Create an Effective Résumé

All information in this appendix was modified from *Training Manual and Supplements*, Transition Assistance Program, U.S. Department of Labor Veterans' Employment and Training Service, January 2015, available at http://www.dol.gov. This discussion offers examples of résumé preparation. The final version of any individual résumé will depend on the job seeker's career plans and choices.

PURPOSE OF A RÉSUMÉ

- Marketing tool—sells YOU!
- Summarizes how your skills and abilities can contribute to the work of a company or other employer.
- Helps you land a job interview.
- Serves as an employer screening tool.

To write the most effective résumé, you need to determine the career field that interests you and research the following:

- The career field you would like to pursue
- Where the jobs are and who is hiring
- What qualifications and credentials you need to attain
- How best to market your qualifications

Chronological Format

- Focuses on your work history with most recent position first.
- Allows potential employers to follow your career history and career progression easily.

Functional Format

- Focuses on your skills and experience; skills are grouped into functional areas.
- Used most often when changing careers or to address employment gaps.

Combination Format

- Combines the chronological and functional résumé formats.
- Highlights skills while providing the chronological work history that some employers prefer.

Targeted Format

- Customized to a specific job.
- Written specifically to the employer's needs.
- The résumé's Objective Statement is important and must refer specifically to the position sought. The résumé will then be directed to the appropriate company personnel. There are other, more specialized résumé formats, but they will not be discussed here.

RÉSUMÉ COMPARISON

One can evaluate the appropriateness of each of the four types of résumé formats by studying the comparison chart in Figure C.4. Only a few of the many aspects of preparing a suitable résumé are discussed here. For more details, major reference sources are:

- The original U.S. Department of Labor document mentioned at the beginning of this Appendix.
- The career development centers located in most educational institutions, including high schools, colleges, and universities.
- Public library resources devoted to jobs and careers.

RÉSUMÉ FORMATS

The four major résumé formats to choose from are

1. Chronological (see Figure C.1)
2. Functional (see Figure C.2)
3. Combination (see Figure C.3)
4. Targeted

Lynn Gweeney
2345 Brook Avenue, Englewood, Colorado 12345
(123) 456-7890
Lynn.Gweeney@email.com

OBJECTIVE: Seeking a position as an armed security guard for Pinkerton Services

KEY QUALIFICATIONS

- Top Secret Clearance
- Bilingual English/Spanish
- Management
- Security
- Conflict Resolution
- Operations
- Instruction
- Leadership
- Procurement

EXPERIENCE

20XX–present Security Specialist U.S. Marine Corps

- Supervised security for $100 million of highly sensitive equipment resulting in zero loss in a 3-year period.
- Implemented new system security plan that led to increased lockdown protection for incarcerated personnel.
- Provided leadership of 25 personnel ensuring in a 30% decrease in staff turnover and a 10% increase in promotions.
- Expertly managed development of investigative reports – recognized as Supervisor of the Quarter for efficiency and accuracy of written instructions and documents.
- Communicated effectively with diverse populations; efficiently managed a diverse workforce and inmate population resulting in a 10% decrease in inmate violence.

20XX–20XX Warehouse Supervisor Micro Chemical, Inc., Denver, CO

- Supervised a crew of 15 in daily operations, including evaluation and discipline resulting in a company-record promotion rate for staff.
- Monitored complex cataloging and ordering systems by implementing a fast-track procurement system decreasing supply turn-around by 20%.
- Proficient at using Windows 7, Microsoft Office, and PeopleSoft Databases.

20XX–20XX Security Guard Mayfield Malls, Denver, CO

- Coordinated work assignments for a four member security team by boosting morale and encouraging an innovative and safe working environment.

EDUCATION

- U.S. Marine Corps Security Specialist
- Metro State College 42 Semester Units in Administration of Justice, Denver, CO

FIGURE C.1 Chronological

Lynn Gweeney
2345 Brook Avenue, Englewood, Colorado 12345
(123) 456-7890
Lynn.Gweeney@email.com

SUMMARY

Provides leadership, instruction and supervision of 25 personnel. Decreased staff turnover by 30% and increased staff promotions by 10%. Consistently recognized for excellent leadership.

KEY QUALIFICATIONS

- Top Secret Clearance
- Bilingual English/Spanish
- Management
- Security
- Conflict Resolution
- Operations
- Instruction
- Leadership
- Procurement

EXPERIENCE

Security

- Supervised security for $100 million of highly sensitive equipment resulting in zero loss in a 3-year period.
- Implemented new system security plan that led to increased lockdown protection for incarcerated personnel.

Investigation

- Investigated security and safety violations and wrote detailed incident reports – led to Mayfield Mall being recognized as the "Safest Shopping Facility in the Mountain States."
- Expertly managed development of investigative reports – recognized as supervisor of the Quarter for efficiency and accuracy of written instructions and documents.

Communication

- Communicated effectively with diverse populations; efficiently managed a diverse workforce and inmate population resulting in a 10% decrease in inmate violence
- Proficient at using Windows 7, Microsoft Office, and PeopleSoft Databases.

Supervision

- Provided leadership of 25 personnel ensuring in a 30% decrease in staff turnover and a 10% increase in promotions.

EDUCATION

- U.S. Marine Corps Security Specialist
- Metro State College 42 Semester Units in Administration of Justice, Denver, CO

FIGURE C.2 Functional

Lynn Gweeney
2345 Brook Avenue, Englewood, Colorado 12345
(123) 456-7890
Lynn.Gweeney@email.com

SUMMARY

Provides leadership, instruction and supervision of 25 personnel. Decreased staff turnover by 30% and increased staff promotions by 10%. Consistently recognized for excellent leadership.

KEY QUALIFICATIONS

- Top Secret Clearance
- Bilingual English/Spanish
- Management
- Security
- Conflict Resolution
- Operations
- Instruction
- Leadership
- Procurement

EXPERIENCE

Security

- Supervised security for $100 million of highly sensitive equipment resulting in zero loss in a 3-year period.
- Implemented new system security plan that led to increased lockdown protection for incarcerated personnel.

Investigation

- Investigated security and safety violations and wrote detailed incident reports – led to Mayfield Mall being recognized as the "Safest Shopping Facility in the Mountain States."
- Expertly managed development of investigative reports – recognized as supervisor of the Quarter for efficiency and accuracy of written instructions and documents.

Communication

- Communicated effectively with diverse populations; efficiently managed a diverse workforce and inmate population resulting in a 10% decrease in inmate violence
- Proficient at using Windows 7, Microsoft Office, and PeopleSoft Databases.

Supervision

- Provided leadership of 25 personnel ensuring in a 30% decrease in staff turnover and a 10% increase in promotions.

EMPLOYMENT HISTORY

- 20XX-20XX Security Specialist U.S. Marine Corps
- 20XX-20XX Warehouseman Supervisor Micro Chemical, Inc., Denver, CO

EDUCATION

- U.S. Marine Corps Security Specialist
- Metro State College 42 Semester Units in Administration of Justice, Denver, CO

FIGURE C.3 Combination

Targeted	Advantages	Disadvantages	Best Used By
Chronological	–Widely used format –Logical flow, easy to read –Showcases growth in skills and responsibility –Easy to prepare	–Emphasizes gaps in employment –Not suitable if you have no work history –Highlights frequent job changes –Emphasizes employment but not skill development –Emphasizes lack of related experience and career changes	–Individuals with steady work record
Functional	–Emphasizes skills rather than employment –Organizes a variety of experience (paid and unpaid work, other activities) –Disguises gaps in work record or a series of short–term jobs	–Viewed with suspicion by employers due to lack of information about specific employers and dates	–Individuals who have developed skills from other than documented employment and who may be changing careers –Individuals with no previous employment –Individuals with gaps in employment –Frequent job changers
Combination	–Highlights most relevant skills and accomplishments –De–emphasizes employment history in less relevant jobs –Combines skills developed in a variety of jobs or other activities –Minimizes drawbacks such as employment gaps and absence of directly related experience	–Confusing if not well organized –De–emphasizes job tasks, responsibilities –Requires more effort and creativity to prepare	–Career changers or those in transition –Individuals reentering the job market after some absence –Individuals who have grown in skills and responsibility –Individuals pursuing the same or similar work as they've had in the past

FIGURE C.4 Targeted Resume Comparison Chart

GLOSSARY

3D printing A manufacturing method whereby three-dimensional objects are quickly made on a machine connected to a computer containing blueprints for the object.

abdominal sonographer Ultrasound technician who specializes in inspecting a patient's abdominal cavity to help diagnose and treat conditions.

abuse A pattern of practices or customs that are unsound or inconsistent with ethical business, fiscal, or healthcare practices or customs.

Academy of Nutrition and Dietetics (AND) A professional organization committed to improving the nation's health and advancing the profession of dietetics through research, education, and advocacy.

Academy for Certification of Vision Rehabilitation (ACVREP) Agency that certifies orientation and mobility specialists and vision rehabilitation therapists.

Accountable care organization (ACO) Healthcare delivery model that ties provider reimbursement payment to the quality and cost of care for a patient population, for example, patients on kidney dialysis.

accreditation The process by which an external entity reviews an organization or program of study to determine if the organization or program meets certain predetermined standards.

Accreditation Council for Education in Nutrition and Dietetics (ACEND) A professional organization that offers accreditation for programs in nutrition and dietetics.

Accreditation Council for Genetic Counseling (ACGC) Agency that accredits academic programs in genetic counseling.

activities of daily living (ADLs) Set of key capabilities used to evaluate need for personal care assistance for older adults or disabled persons; includes bathing, dressing, toileting, and self feeding.

acute infectious disease An illness with sudden onset that has a intense but short effect on the body.

ADA *See* American Dental Association.

adaptive equipment Special equipment designed to facilitate everyday functioning for patients.

administrative medical assistant A medical assistant who specializes in administrative tasks.

ADN *See* associate's degree in nursing

ADN-to-BSN Educational program that allows nurses with an associate's degree in nursing (ADN) to complete a bachelor's degree in nursing (BSN).

ADN-to-MSN Educational program that allows nurses with an associate's degree in nursing (ADN) to enter and complete a master's degree in nursing (MSN).

adult day care services Program for the disabled or elderly who require health and/or support services; used to supplement home care services or a less costly option to being institutionalized.

advanced airway devices Devices used to open or maintain a patient's obstructed or injured airway to maintain breathing.

advanced emergency medical technician The third level of a four-tier category of emergency medical technician who provides basic and limited advanced emergency medical care and transportation for critical and emergent patients who access the emergency medical system.

advanced practice registered nurse (APRN) Registered nurse with master's degree training who can serve as a primary care provider; includes nurse anesthetists, nurse midwives, nurse practitioner, and clinical nurse specialists.

advance premium tax credit Tax credit that can be used to reduce the cost of health insurance premiums for policies purchased from the Marketplace.

aerosol Medications suspended in a gas that forms a mist the patient inhales.

Affordable Care Act (ACA) Healthcare reform legislation signed into law by President Barack Obama in March 2010 with a goal of increasing access to health insurance while controlling healthcare costs.

Aging Network System of federal, state, and local agencies committed to having older Americans live independently in their homes and communities.

allopathic physician A physician offering medical care using pharmacologically active agents or surgical interventions to treat or suppress symptoms of diseases or injuries.

almshouses Facilities that provided care for the disabled or ill in the 1700s, before hospitals were established.

Alzheimer's disease A degenerative brain disease and the most common form of dementia; early symptoms are a decline in cognitive function that affects memory, language, and problem solving. Later stages require complete care.

ambulatory care Health care provided outside of institutional settings.

American Academy of Nurse Practitioners Certification Program Agency within the academy that offers specialty certification for nurse practitioners.

American Association for Laboratory Animal Science (AALAS) Agency that offers certification for veterinary technicians who work in animal research laboratories.

American Association of Cardiovascular and Cardiopulmonary Rehabilitation (AACVPR) Multidisciplinary professional association of health professionals in the field of cardiac and pulmonary rehabilitation.

American Board of Genetic Counseling (ABGC) Agency that administers qualifying exams for genetic counselors to become certified.

American Board of Hospice and Palliative Medicine Certifies physicians to practice in hospice and palliative care.

American Board of Medical Specialties (ABMS) Agency that administers qualifying exams to practice in medical specialties, for example, surgery.

American Board of Podiatric Medicine Agency that certifies podiatrists in the field of medicine.

American Board of Podiatric Surgery Agency that certifies podiatrists in the field of surgery.

American College of Nurse-Midwives (ACNM) Agency that accredits graduate programs for nurse-midwives.

American College of Sports Medicine (ACSM) Professional organization that promotes the advancement and integration of scientific research into educational and practical applications of exercise science and sports medicine.

American Dance Therapy Association (ADTA) Professional organization dedicated to the profession of dance/movement therapy.

American Dental Association (ADA) A professional organization that represents dentists nationwide and seeks to address the most important professional and public health issues.

American Medical Association (AMA) A professional medical organization that represents physicians nationwide and seeks to address the most important professional and public health issues.

American Midwifery Certification Board Organization that provides certification for midwives and nurse-midwives. (*See* certified midwives, certified nurse-midwives.)

American Nursing Credentialing Center Organization that offers specialty certification for nurses; for example, informatics and cardiac rehabilitation.

American Osteopathic Association (AOA) Accrediting agency for graduates of osteopathic physicians; also administers certifying exams for specialty physicians.

American Physical Therapy Association (APTA) A national professional organization whose goal is to foster advancements in physical therapy practice, research, and education.

American Podiatric Medical Licensing Exam (APMLE) Exam required for graduates of podiatric medicine to practice podiatric medicine.

American Society of Exercise Physiologists (ASEP) Professional organization of exercise physiologists that promotes the profession and sets educational standards.

American Speech-Language-Hearing Association (ASHA) Agency that certifies speech-language pathologists and audiologists.

American Therapeutic Recreation Association (ATRA) Professional organization that represents the interests and needs of therapeutic recreation specialists.

anatomy The study of the structure of organisms and their parts.

animal and human health Control of diseases transmissible from animals to humans.

Animal and Plant Health Inspection Service (APHIS) Division of the U.S. Department of Agriculture that protects and promotes U.S. agricultural health including exports.

anorexia nervosa An eating disorder involving a refusal to eat.

applied behavior analysis (ABA) Application of behavioral sciences in schools and clinics to improve behavioral problems and facilitate learning; part of treatment for autism spectrum disorder.

apprenticeship program Combination of on-the-job training and related instruction where workers learn the aspects of a specific occupation.

app Software program ("application") developed to run on a computer or mobile device to accomplish a specific purpose.

Area Agency on Aging (AAA) One of 365 agencies nationwide with the purpose of providing resources and supports for older adults; established in 1973.

art therapist (AT) Mental health professional that combines artistic, creative, and psychotherapeutic skills to encourage clients to express emotions through an art medium to promote physical, mental, and emotional health.

Art Therapist Registered-Board Certified (ATR-BC) The highest level of art therapy credential achieved by successfully passing a national examination; completion of graduate-level education in art therapy and clinical experience are required to sit for the exam.

Art Therapy Credentials Board (ABCB) Professional board responsible for ensuring educational and professional standards of registered and board-certified art therapists.

art therapy Uses the concept of art as a device for nonverbal expression and communication.

arterial blood sample A blood sample taken from an artery instead of a vein.

assessment Taking steps to determine the needs of a specific population.

assistant administrator Administrator who manages the day-to-day responsibilities in large companies or facilities.

assisted-living facility Agency that provides assistance with daily living activities.

assistive devices Medical equipment designed to help patients with disabilities perform everyday tasks and activities. Also known as protective or preventive devices including tape, bandages, and braces that athletes or their trainers use to protective, prevent, or avoid injuries during a sport or other form of training that involves the human body.

associate administrator Administrator who manages the day-to-day responsibilities in large companies or facilities.

associate's degree in nursing (ADN) A two-year degree for individuals seeking to become a registered nurse.

Association for Educators and Rehabilitation of the Blind and Visually Impaired (AER) Professional organization that provides support for professionals who work with those who are visually impaired.

Association of Social Work Boards (ASWB) Agency that offers the licensing exam required to practice social work.

athletic trainer A professional who instructs athletes on correct technique and appropriate conditioning to maximize athletic performance while minimizing risk of injury.

Athletic Trainers Strategic Alliance A group of four organizations committed to the education and certification of athletic training professionals.

audiologist Professional that works with people who have hearing, balance, and related ear problems.

autism spectrum disorders (ASD) Group of developmental disabilities that can cause significant social, communication, and behavioral challenges.

automated analyzer Laboratory equipment that automatically prepares, measures, and reports content of body fluids or cells.

automated external defibrillator (AED) Portable device that checks the heart rhythm and restores a normal heart rhythm by sending an electric shock to the heart when the heart suddenly stops beating.

avian influenza Strains of influenza virus that normally infect birds, including poultry, but can sometimes pass to humans.

bachelor of science in nursing (BSN) A four-year degree obtained in order to become a registered nurse.

bachelor of science in social work (BSW) A four-year degree obtained in order to become a social worker.

bar coding technology The use of an optical scanner to electronically capture information encoded on a product.

behavioral disorder counselor A psychotherapist who helps clients modify their behavior in a specific aspect of their life, e.g., compulsive behavior or eating disorders.

Behavioral Risk Factor Surveillance System (BRFSS) A public health program in which states collect data on behaviors that increase risk for chronic disease. Statistics are reported to the National Center for Health Statistics, a division of the Centers for Disease Control and Prevention (CDC).

behavior analysis Method to assess and treat clients with skill deficits in language, motor, social, and reasoning skills.

Behavior Analysis Certification Board (BACB) Agency that certifies behavior analysts, assistant behavior analysts, and behavior technicians.

behavior therapist Professional who helps individuals to modify their behavior in an aspect of their life. As an example, a behavior therapist may be asked to modify the eating behavior of an obese person.

billing process The method of submitting and following up with claims made to government payers, insurance companies, and patients.

binge-eating disorder An eating disorder involving periods of binge eating that, unlike bulimia, are not followed by compensatory behaviors, such as purging, exercise, or fasting.

biological sciences The study of the branch of knowledge that deals with living organisms and vital processes.

biomedical engineer Person who uses their knowledge of biology, medicine, technology, and mechanical engineering to research and develop new equipment.

blood bank The collection and preparation of blood products for transfusion.

blood bank technologist (specialist) Identifies blood types, antibodies, and antigens, and tests blood for viruses that could be transmitted during blood transfusions, for example the human immune deficiency virus (HIV).

blood pH A measure of the acidity or alkalinity level of the blood.

Blue Cross and Blue Shield Private health insurance that covers both inpatient and outpatient services; first insurance plan to cover the cost of physician services in 1939.

Board-Certified Assistant Behavior Analyst® (BCaBA®) Certification as an assistant behavior analyst with bachelor's-level education who works under the supervision of a certified behavior analyst.

Board-Certified Behavior Analyst® (BCBA®) Certification as a board analyst with graduate-level education who is qualified to work independently and supervise the work of assistant behavior analysts and registered behavior technicians.

Board-Certified Dance/Movement Therapist (BC-DMT) Credential reflects the attainment of an advanced level of dance/movement therapy including preparation for supervising and training others in the field and engaging in a private practice.

Board-Certified Diplomate in Clinical Social Work (BCD) Advanced generalist certification for clinical social workers.

Board-Certified in Audiology® Audiologist who has met education and experience requirements and successfully completed the certification exam.

Board-Certified Specialist in Fluency (BCS-F) Specialized certification for speech therapists.

Board-Certified Specialist in Swallowing and Swallowing Disorders (BCS-S). Specialty certification for speech therapists who work with individuals with neurological diseases that affect swallowing.

Board of Certification, Inc. (BOC) Certification program for entry-level athletic trainers.

Board of Certified Safety Professionals (BCSP) Agency that certifies occupational health specialists and technicians.

board examination Standardized licensing examinations for a specific area of medical practice.

bone injuries Damage to bone; many bone injuries are most common among athletes in certain sports, for example, injury to wrist bones among tennis players.

breast sonographer Ultrasound technician who specializes in studying diseases of the breast.

BSN *See* bachelor of science in nursing.

BSW *See* bachelor of science degree in social work.

budget The amount of money that is available for, required for, or assigned to a particular purpose.

bulimia nervosa An eating disorder characterized by cyclical binging and purging episodes.

bundled payments Method of controlling healthcare costs by reimbursing Medicare for all services for a procedure, for example hip replacement surgery and home care after discharge from the hospital.

business dietitian nutritionist Works as a professional resource for corporations in product development, as the sales professional or as a food and nutrition marketing expert.

cancer registrar Individual who maintains a hospital-based registry of cancer patients.

capitation Paying a fixed amount per person for health services without regard to the volume of services provided.

cardiac rehabilitation program Individualized instruction on physical activity, nutrition, and stress management, especially after a heart attack or open heart surgery.

cardiology technologist Professional who assists physicians in diagnosing and treating heart and blood vessel ailments.

cardiopulmonary disease Disease of the heart and/or lungs.

cardiopulmonary resuscitation (CPR) certification Training in emergency treatment when someone's heart has stopped beating or someone has stopped breathing; treatment includes clearing of the airway, chest compressions, and rescue breathing.

career development An organized planning method used to form an individual's work identity.

caregiver An individual, often an unpaid family member, who provides personal care for a disabled, ill, or elderly person.

carrier testing Tests used to identify people who "carry" changes in DNA that are linked to disease.

cell counter Automated device used to count cells, for example before and after drug treatment to evaluate the effectiveness of treating an infectious disease.

Center for Veterinary Medicine (CVM) Agency within the U.S. Food and Drug Administration (FDA) responsible for

drug safety testing for drugs used by food and companion animals.

Center for Medicare & Medicaid Innovation Division of CMS that tests various payment and service delivery models to achieve better health care while lowering costs by improving healthcare systems.

Centers for Disease Control and Prevention (CDC) Branch of the federal government that tracks the health of the nation and provides support to identify causes of epidemics and food-borne illnesses.

Centers for Medicare & Medicaid Services (CMS) Agency of the U.S. Department of Health and Human Services (HHS) that manages Medicare and Medicaid and strives to ensure effective, up-to-date healthcare coverage and to promote quality care for beneficiaries.

Certificate of Clinical Competence in Audiology (CCC-A) Issued to individuals who present evidence of their ability to provide independent clinical services to patients diagnosed with auditory disorders.

Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) Issued to individuals who present evidence of their ability to provide independent clinical services to patients diagnosed with speech or language disorders.

certification The process or action of providing an individual with an official document attesting to their status or level of achievement.

certified athletic trainer Healthcare provider who specialize in prevention, treatment, and rehabilitation of injuries and illnesses in athletes and the physically active.

certified cardiac rehabilitation professional (CCRP) A professional who demonstrates knowledge and skills in exercise testing and counseling in nutrition, exercise training, and smoking cessation as well as management of weight, diabetes, blood pressure, and blood lipids.

certified clinical exercise specialist (CES) A professional who demonstrates knowledge and skills in conducting health screening and exercise testing, and evaluating strength and flexibility in healthy clients and those with cardiovascular, pulmonary, and metabolic diseases.

certified diabetes educator® (CDE®) Specialty certification for health professionals counseling patients with diabetes; requires experience and exam.

certified environmental health technician (CEHT) Worker who has met education and/or experience requirements and successfully completed the certification exam; assists environmental scientists and others to identify, assess, treat, and correct environmental problems.

certified health education specialist (CHES) Certification for entry-level health educators; eligibility for the certifying exam is a bachelor's degree in public health or health promotion.

Certified Movement Analyst (CMA) Specialist who interprets and/or uses nonverbal communication expressed through movement; used in psychotherapy and for those in the performing arts.

certified midwife (CM) Practitioners who provide the same services as CNMs but who lack the training and certification of a registered nurse.

certified nurse midwife (CNM) APRN who provides primary care to women, including gynecological exams, family planning advice, prenatal care, assistance in labor and delivery, and neonatal care.

certified nutrition specialist® (CNS®) Conferred by Board for Certification of Nutrition Specialists (BCNS); requirements are a graduate degree, clinical experience, and passing of exam.

certified nutrition specialist-scholar® (CNS-S®) Conferred by Board for Certification of Nutrition Specialists (BCNS); requirements are a graduate degree and passing of exam.

certified nutrition support clinician® (CNSC®) Specialty certification conferred by American Society for Enteral and Parenteral Nutrition (ASPEN) for health professionals.

certified orientation and mobility specialist (COMS®) Has met education and experience standards and successfully completed the certification exam.

certified personal trainer (CPT) A certificate awarded by the American College of Sports Medicine to those who have successfully completed training in cardiopulmonary resuscitation (CPR) and automated external defibrillation (AED) and passed the certifying exam.

certified registered nurse anesthetist Provides anesthetics to patients in every practice setting, and for every type of surgery or procedure.

certified respiratory therapist (CRT) Credential given to those who graduate from entry-level or advanced programs accredited by CoARC and pass a certifying exam.

certified safety professional (CSP) Occupational health specialist or technician who has met education and/or experience requirements and successfully passed the certification exam.

certified therapeutic recreation specialist (CTRS®) Health professional qualified to use recreational activities (sports, arts, crafts, dance, music) to reduce stress and improve functioning in those with an illness, injury, or disability.

certified tumor registrar Individual who has met external requirements to maintain a registry of cancer patients.

certified vision rehabilitation therapist (CVRT) Health professional who has met education and experience requirements and successfully passed the certifying exam.

chest physiotherapy Treatment prescribed after surgery to help return the patient's lungs to their normal level of functioning and prevent the lungs from becoming congested.

chief executive officer (CEO) Professional who provides overall management direction to an organization.

child and family social worker Social worker who provides assistance to improve the social and psychological functioning of children and families.

child language and language disorders (BCS-CL) Specialty certification for speech therapists.

child or adult protective services Social workers who investigate reports of abuse and neglect and intervene if necessary.

Children's Health Insurance Program (CHIP) Health insurance for children from families with incomes too high for Medicaid but too low to afford the cost of premiums for private health insurance.

child welfare social worker Social worker who assesses the well-being of at-risk children and obtains services to protect them if necessary.

chromosomes Contain DNA and unique characteristic passed from parents to offspring.

chronic illness A disease that is long in duration, reoccurs frequently, and progresses slowly.

Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA) Program that provides health care for family members of disabled or deceased member of the military services.

Climate change analysts Researchers who analyze policies related to renewable energy and efficiency and make recommendations for legislation.

clinical chemistry specialist Technician who specializes in the chemical analysis of body fluids.

clinical decision support systems (CDSS) The variety of technologies that provide healthcare providers with diagnostic and treatment recommendations.

clinical dietitian nutritionist Provides nutritional services for patients in hospitals, nursing homes, clinics, or doctors' offices.

clinical documentation improvement specialist Individual responsible for review of the patient's electronic health record and serves as the liaison to the clinical treatment team in documenting clinical care.

Clinical Laboratory Improvement Act (CLIA) Federal law to ensure quality standards for laboratory testing of human specimens (blood, body fluid, and tissue); used to diagnose, prevent, or treat disease.

clinical laboratory (medical) technician Performs laboratory testing in conjunction with pathologists.

clinical laboratory (medical) technologist A mid-level laboratory supervisor who generally has an associate's degree and performs a range of routine tests and laboratory procedures.

Clinical medical assistant A medical assistant who specializes in providing clinical care to patients.

Clinical nurse specialist (CNS) Nurse who provides direct patient care and expert consultations in one of many nursing specialties; master's degree training required.

clinical preventive services Guidelines for primary care providers to use in screening and counseling patients to prevent or reduce the risk of heart disease, cancer, and infectious disease.

clinical psychologist Specializes in the assessment and treatment of persons with mental and emotional problems and illnesses.

clinical social worker Provides counseling for clients with behavioral health problems (mental health and substance use disorders).

closely held corporations Companies in which more than 50% of stock in the corporation is owned by five or fewer individuals.

cloud computing The virtualization of servers.

cochlear implant specialty certification® (CISC®) Specialty certification for audiologists that have met experience requirements and successfully completed the certifying exam.

code of ethics A written list of a profession's values and standards of conduct.

coder An individual who uses various classification systems to code, categorize, and report patient information for multiple purposes.

cognitive skills Competent use of one's intellectual activity (as thinking, reasoning, remembering, imagining, or learning words).

Committee on Accreditation of Allied Health Education Programs (CAAHEP) Largest accrediting body for health science professions; accredits over 2,000 educational programs in 28 health science occupations.

Commissioned Corps Health professionals who work for federal public health services in different agencies within HHS.

Commissioned Officer Student Extern Training Program A federal government program for environmental health specialists.

Committee on Accreditation for the Exercise Sciences (CoAES) Accrediting agency for academic programs that

prepare students for positions in the health, fitness, and exercise industry.

Committee on Accreditation for Respiratory Care (CoARC) Promotes quality respiratory therapy education through accreditation services.

Commission on Accreditation of Athletic Training Education (CAATE) Accrediting agency for academic programs for athletic trainers.

Commission on Dietetic Registration (CDR) Agency that administers registration of dietitians.

communication The sharing of information between two or more people as a way to convey meaning.

communication disorder Disruption in the regular or normal functions of communication.

communication skills A set of skills that enables a person to convey information so it is received and understood.

community and social service occupations Professionals who work with individuals to assist them in obtaining needed care or services.

community-based care Delivery of health care in outpatient clinics, surgical centers, or the home instead of in hospitals, nursing homes, or rehabilitation centers.

community dietitian nutritionist Individual that counsels on sound nutrition practices in settings outside of hospitals or long-term care facilities.

community health worker Provides link between the community and health educators; implements strategies to improve health of individuals and communities.

community hospital Short-term general and specialty hospitals.

companion animal medicine Encompasses the prevention, diagnosis, and treatment of pet diseases.

complementary and alternative medicine (CAM) Medical treatments used to *complement* standard medical treatment, for example the use of acupuncture to treat side effects of cancer treatment; *alternative* treatment is used instead of standard medical treatment, for example following a special diet instead of using anticancer drugs prescribed by a physician.

compliance Adherence to regulations or rules.

compounding The actual mixing of ingredients to form powders, tablets, capsules, ointments, and solutions.

Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA) Exam required of graduates of osteopathic medicine to obtain a license to practice medicine.

computed tomography (CT) Radiography in which a three-dimensional image of a body structure is constructed by computer from a series of plane cross-sectional images made along an axis.

computerized physician order entry (CPOE) system A medication order and fulfillment system.

confidentiality The obligation of healthcare providers to not disseminate patient information beyond proper channels.

conflict of interest A clash between an individual's selfish interests and his or her obligations to an organization, group, or persons.

conflict resolution Finding a peaceful way for two or more parties to resolve a disagreement.

Congressional Budget Office (CBO) Provides budget committees and the U.S. Congress objective, impartial information about budgetary and economic issues; prepares cost estimates for proposed legislation.

Consensus Model for APRN Regulation Model to ensure consistency for the education, licensure, and certification of advanced practice registered nurses.

Construction health and safety technician (CHST) certification Certification available to occupational health technicians employed in construction.

consultant dietitian nutritionist Nutritionist who works under contract with facilities or have private practices.

consultant pharmacist Pharmacists who travel to nursing homes or other facilities to monitor patients' drug therapy.

continuing care community Facilities that allow residents to move from independent living, to assisted living, or to a skilled nursing facility as their needs change.

continuing education The process by which a professional seeks recurrent learning activities and training beyond the initial license or certificate.

coordinate To work with different groups or individuals to execute a plan.

Coordinated Program in Dietetics (CPD) Undergraduate or graduate program in dietetics that includes clinical experience; graduates are eligible to take the registration exam.

copayment The share of the cost for healthcare services (for example a doctor's visit) not covered by health insurance.

corrective lenses Lenses worn in front of the eye to correct problems with vision; these can either be contact lenses or glasses.

cost sharing reduction plan Costs for out-of-pocket deductibles, coinsurance, and copayments are reduced for those obtaining health insurance through the Marketplace.

Council for Standards in Human Service Education (CSHSE) Agency that accredits educational programs in human services.

Council on Education for Public Health Agency that accredits schools and programs of public health.

Council on Podiatric Medicine Education Accrediting agency for schools of podiatric medicine.

Council on Social Work Education Agency that accredits schools or programs of social work.

counseling psychologist A therapist who helps normal or moderately maladjusted persons, either individually or in groups, to gain self-understanding, recognize problems, and develop methods of coping with their difficulties.

criminal justice social worker Makes recommendations to courts, prepares presentencing assessments, and provides services to prison inmates.

CT technologist A radiographer who specializes in computed tomography.

cultural difference The customary beliefs, values, and traits of a racial, religious, or social group that distinguishes one from another.

cytotechnologist Technologist who screens human cell samples under a microscope for early signs of cancer.

dance movement therapy (DMT) Combining movement and psychotherapy to integrate emotional, cognitive, physical, and social aspects of an individual.

data service hub Federally managed data services for consumers applying for health insurance through the Health Exchanges/Marketplace that link to Medicaid and the Children's Health Insurance Program (CHIP) and verifies income and citizenship status.

deductible The dollar amount paid out of pocket for healthcare services before health insurance will cover the cost.

deep-tissue massage A form of massage therapy that targets large muscle groups to relieve pain and tension.

defibrillator An electronic device used to restore a heart by applying an electric shock to it.

demographics The dynamic balance of a population.

dental assistant A professional who assists dentists by performing a variety of patient care, office, and laboratory duties.

dental hygienist A professional who cleans teeth, provides other preventive dental care, and teaches patients how to practice good oral hygiene.

dental laboratory technician A specialist who creates dental appliances according to a dentist's prescription. Dental laboratory technicians who create porcelain and acrylic restorations are often called *dental ceramicists*.

dental photography Records dental techniques and procedures.

dental public health specialist A dentist who promotes good dental health and disease prevention within the community.

dentist A trained practitioner who diagnoses and treats problems with teeth and tissues in the mouth, along with giving advice and administering care to help prevent future problems.

Department of Defense (DOD) Branch of the U.S. government that provides health care for active and retired members of the military service and their families in clinics, rehabilitation centers, and hospitals.

developmental disability A term used in the United States and Canada to describe lifelong disabilities attributable to mental and/or physical impairments manifested prior to age 18.

diagnosis and treatment Identifying and treating injury or disease.

diagnosis and treatment plan Identification of a disease and the detailed program of action for treating the patient.

diagnosis-related groups (DRGs) A set of payment categories that are used to classify patients for the purpose of hospital reimbursement with a fixed fee regardless of the actual cost and that are based on the diagnosis, surgical procedure used, age of patient, and expected length of stay.

diagnostic imaging The use of an image of a part of the body created by radiographic techniques to aid in a diagnosis.

diagnostic medical sonography Use of sound waves to generate an image for the assessment and diagnosis of various medical conditions.

Didactic Program in Dietetics (DPD) Undergraduate or graduate program that prepares college students to apply for a dietetic internship.

Dietary Managers Association Offers coursework for managers of food service operations in healthcare facilities to become eligible to work as a dietary manager.

dietetic assistant (DA) Under direct supervision from a food service manager, dietetic technician, or dietitian, works in preparation and serving areas of hospitals and other healthcare facilities.

dietetic educator Health professional that specializes in the education of dietitian nutritionists and dietetic technicians.

dietetic internship (DI) Training program that includes clinical experience; graduates are eligible to take the registration exam.

dietetic technician, registered (DTR) Works as a member of the food service, management, and healthcare team either independently or in consultation with a registered dietitian.

diploma nurse A nurse who has received a diploma administered in a hospital.

direct support professional Aide who works with individuals who are developmentally or intellectually disabled.

disease prevention Public health programs designed to reduce the risk of injury or illness in the workplace or for the general public.

disparagement The action of belittling or criticizing the skills, knowledge, or qualifications of another professional.

dispensing optician A professional trained to fit and adjust eyeglasses, who may in some states also fit contact lenses according to prescriptions written by ophthalmologists or optometrists, but who does not examine eyes or prescribe treatment.

distributive health care A healthcare system in which delivery of services is not localized in one place, but instead is available in a variety of venues.

DO *See* Doctor of Osteopathy.

Doctorate in Clinical Social Work (DSW) Advanced degree for social workers in clinical practice.

Doctor of Audiology (AuD) Academic degree in audiology practice; required to become a licensed audiologist.

Doctor of Optometry Degree that requires the completion of a four-year program at an accredited optometry school, preceded by at least three years of pre-optometric study at an accredited college or university.

Doctor of Osteopathy (DO) A degree conferred by an osteopathic medical school. Osteopathic physicians have the same privileges and use similar techniques as allopathic physicians (MDs), but tend to emphasize a more hands-on approach, particularly with musculoskeletal injuries and disorders.

Doctor of Veterinary Medicine (DVM/VMD) Animal physician who is trained to treat diseases of companion and food animals.

documentation The process of entering a description of a patient's history, condition, diagnostic and therapeutic treatment, and results of treatment.

dosimetrist A technician who calculates the dose of radiation that will be used for treatment.

DRG validator One who performs quality review of records and data coded by the coding staff.

dual eligible Individual who is eligible for both Medicare and Medicaid services based on age and/or disability and income.

Ebola Rare and deadly viral infection endemic to Africa; the largest Ebola epidemic in history occurred in West Africa in 2014.

echocardiographer Technologist who uses ultrasound to examine the heart chambers, valves, and vessels.

economic effectiveness Ability of an individual to be financially self-sustaining within the parameters of an emotional or mental disability.

educational psychologist Designs, develops, and evaluates materials and procedures to resolve problems in educational and training programs.

educator dietitian Teaches nutrition and food service systems management in colleges, universities, and hospitals, conducts research, and authors articles and books.

electrical stimulation Use of a low-voltage electrical current to stimulate nerves for relief of pain.

electrocardiogram (ECG) An instrument for recording the changes of electrical potential occurring during the heartbeat that is used to diagnosis abnormalities of the heart.

electrocardiograph (ECG) technician Cardiovascular technician who specializes in ECGs, stress testing, and Holter monitor procedures.

electroencephalography (EEG) Procedure that measures the electrical activity of the brain.

electroneurodiagnostic technologist (EEG technologist) A technician who operates electroencephalographs to measure the electrical activity of the brain.

electronic health record (EHR) Individual patient health record stored in a computer database for easy access by physicians and other healthcare workers regardless of the setting—clinic, hospital, nursing home, or emergency care center.

electronic health record support specialist One who provides ongoing end-user support, maintenance, training, and customization of the EHR.

emergency equipment Equipment such as heart defibrillator, intravenous accessory, oxygen supply, etc., intended for use in patients experiencing a medical emergency outside a hospital or similar facility.

emergency medical responder The first level of a four-tier category of emergency medical technician who is prepared to care for patients at the scene of an accident and while transporting patients by ambulance to the hospital under medical direction.

emergency medical services A network of services coordinated to provide aid and medical assistance from primary response to definitive care, involving personnel trained in the rescue, stabilization, transportation, and advanced treatment of traumatic or medical emergencies.

emergency medical technician The second level of a four-tier category of emergency medical technician who has more advanced training and can provide the most extensive pre hospital care; however, what they are permitted to do varies by state.

emergency medicine A medical specialty in which physicians care for patients with acute illnesses or injuries that require immediate medical attention.

emergency skills Applicable to a medical emergency including, but not limited to, emergency care (health care at the basic life support level), for example, spinal immobilization, administration of oxygen, and control of bleeding.

emotional disorders Difficulty in competent use of one's intellectual activity (as thinking, reasoning, remembering, imagining, or learning words).

emotional disturbance Inability to learn, build, or maintain interpersonal relationships, display of inappropriate behaviors, and tendency to develop physical symptoms or fears associated with personal or school problems that adversely affect a child's educational performance.

emotional stress Feeling of being suddenly overwhelmed by the tasks of everyday life.

employee assistance program Mental health programs provided by employers to help employees deal with personal problems.

employer shared responsibility payment The Affordable Care Act requires employers with at least 100 full-time employees to either offer minimum essential health insurance coverage or make an *employer shared responsibility payment* to the Internal Revenue Service for each employee.

endodontist A dentist who performs root-canal surgery and therapy.

endotracheal intubation A procedure in which a tube is inserted into the trachea in order to facilitate breathing in a person with severe respiratory distress or obstruction.

engineering psychologist Deals with the design and use of the systems and environments in which people live and work.

environmental chemist Evaluates the impact of industrial chemical waste on the natural environment—plants, animals, and humans.

environmental factor Determinant of disease found in the surroundings of individuals and groups.

environmental hazard Source of danger in the area that surrounds you.

environmental health specialist Assesses air, water, and soil contamination from industrial waste or natural disasters.

Environmental Protection Agency (EPA) Branch of U.S. government that develops policies to protect the safety of air, soil, and water; monitors compliance by industry; and provides technical assistance in times of weather and other emergencies.

environmental restoration planner Assesses polluted land or water sites and determines cost of restoration.

epidemic An outbreak of disease in a certain geographic area in greater numbers than usual; the most common cause of an epidemic in the United States is influenza (flu).

e-prescribing The use of a computerized physician order entry system solely for medications.

ergonomist Ensures comfort and safety of workers to prevent injury or illness in the workplace.

essential health benefits Comprehensive health services that the Affordable Care Act requires health insurance plans to offer through the Health Exchanges/Marketplace.

essential hospitals and health systems Facilities that provide health care to vulnerable populations with limited or no access to health care because of finances, insurance status, or health condition.

ethics The formal study of moral choices that conform to standards of conduct.

evidence-based practice Use of scientific evidence to guide practice decisions.

Exchange Planning Grants Grant money provided by HHS to individual states to establish Health Exchanges/Marketplace for consumers to purchase health insurance plans as a result of the Affordable Care Act.

exclusive provider organization (EPO) Health plan that only covers the cost of providers inside of the network.

exercise physiologist, certified (EPC) Certification given by the American College of Sports Medicine for those meeting educational and experience requirements and pass the certifying exam.

experimental or research psychologist Designs, conducts, and analyzes experiments to develop knowledge regarding human and animal behavior. Also referred to as research psychologist.

family practice A medical practice that provides health care regardless of age or sex while placing emphasis on the family unit.

family services social worker A social worker within either a government and/or nonprofit organization designed to better the well-being of individuals who come from unfortunate situations, whether environmental or biological.

Federally Facilitated Marketplace (FFM/FFM-P) Options for state governments to provide a Marketplace for consumers to purchase health insurance under the Affordable Care Act. FFM is established by the federal government and FFM-P is jointly established by the federal government and an individual state government.

federally funded primary care health center Facility that serves high-need communities designated as medically underserved areas or populations.

federal poverty level (FPL) A measure of income level issued yearly by HHS used to determine eligibility for Medicaid, the Children's Health Insurance Program, and the cost of premiums for health insurance purchased through Health Exchanges.

federally qualified health center (FQHC) Provides preventive, medical, dental, and mental health services to low-income, minority, and homeless individuals in both urban and rural underserved areas. Centers are qualified to receive reimbursement by Medicare and Medicaid.

Federation of State Massage Therapy Boards (FSMTB) Organization of state boards of message therapy that administer a common licensing exam for massage therapists regardless of state of residence.

fee-for-service Payment to a healthcare provider for each medical service rendered to a patient.

financial viability Ability to work, function, and develop on a financial level.

first responder This term has many meanings. In general, it refers to the first "certified" person—for example, an emergency medical technician, a police officer, or a firefighter—who arrives at the scene of a disaster, accident, or life-threatening medical situation. The first responder's duties include providing medical assistance and calling other emergency caregivers to the scene.

fissure sealants Sometimes known as pits sealants. In dentistry, one method of preventing cavities from developing in the pits and fissures identified in or near teeth is to seal them off with a special varnish called a pit and fissure sealant.

fitness trainer/personal trainer Fitness trainers certified by the American College of Sports Medicine are qualified to plan and implement exercise programs for healthy individuals to improve strength, endurance, flexibility, and cardiorespiratory fitness.

fluoroscopy An instrument used in medical diagnosis for observing the internal structure of opaque objects by casting a shadow of the object upon a fluorescent screen.

food animal veterinarian Specializes in the health care of cattle, poultry, swine, fish, and sheep.

frail elderly Physically weak patients of advanced age.

franchise Licensing granted to an individual or group to market a company's goods or services.

fraud The intentional deception of another person to that person's detriment.

fringe benefit An employment benefit that has a monetary value but does not affect basic wage rates, e.g., health insurance or disability insurance.

functional magnetic resonance imaging (fMRI) A method of tracing the work of brain cells by tracking changes in oxygen levels and blood flow to the brain.

gamma scintillation camera Scanner used to take pictures of the radioisotopes as they pass through the patient's body.

genetic counselor A professional who gives information and advice regarding the risk of inherited conditions.

geriatrics Branch of medicine that deals with the problems and diseases of old age and aging people.

gerontology The scientific study of the biological, psychological, and sociological phenomena associated with old age and aging.

geriatric social worker Social worker who specializes in services to older adults.

geropsychologist A psychologist who deals with the special problems faced by older adults.

globalization Ease of access to travel and transportation of food products. Increases exposure to communicable diseases and food-borne illness, and adds to challenges in tracking the origin of disease or food-borne illness.

government healthcare financing Legislation that requires financial support of federal healthcare programs—Medicaid, Medicare, and Children's Health Insurance Care Program.

grammatical pattern Proper use of words and their meanings.

gross domestic product (GDP) The standard measure of the value of the goods and services produced by a country minus the value of imports during a specified period of time.

group insurance Available to members of a group through an employer, credit union, or professional or trade group.

group practice Physicians who often work as part of a team, coordinating care for a population of patients, providing backup coverage, and allowing for more time off.

gynecology A field of specialization that focuses on women's health.

hardship waiver Part of 2010 healthcare reform legislation that exempts individuals from purchasing health insurance because of financial hardship.

health and visual sciences Course of study for a student in an optometry program; courses in pharmacology, optics, vision science, biochemistry, and systemic diseases are included.

Health Care and Education Reconciliation Act of 2010 Modification of the original Patient Protection and Affordable Care Act with the addition of student loan reform.

healthcare administrator Individual who directs and controls the activities of a healthcare facility or division.

healthcare executive Leading manager or officer of a healthcare facility or organization.

healthcare facility One of a variety of settings where a patient can receive care.

healthcare financing To furnish with necessary funds needed to pay for health care.

HealthCare.gov Website operated by HHS that provides information for Americans seeking to obtain health insurance.

healthcare practitioners and technical occupations Professionals who work directly with patients or with patient laboratory samples to identify health status.

healthcare reform Federal legislation in 2010 designed to expand healthcare coverage while controlling healthcare costs and improving healthcare delivery systems.

healthcare social worker A social worker who helps patients and their families cope with chronic, acute, or terminal illness.

healthcare support occupation Occupation with lower educational requirements and shorter training periods. For example, nursing assistants, medical assistants, dental assistants, and physical therapy assistants and aides.

healthcare worker Employee in a healthcare facility who may include, but are not limited to, physicians, nurses, aides, dental workers, technicians, workers in laboratories and morgues, emergency medical service personnel, part-time personnel, and temporary staff (such as students) not employed by the healthcare facility.

healthcare workforce All professional and nonprofessional workers in all healthcare settings—hospitals, clinics, nursing homes, laboratories—that provide health care to individuals.

health data analyst One who acquires, manages, analyzes, interprets, and transforms patient data into accurate, consistent, and timely information.

health educator Person who teaches healthy behaviors—e.g., diet, exercise—to improve the health of communities.

Health Exchange/Marketplace Site for selecting and purchasing health insurance as a result of the Affordable Care Act; can be online or at a physical site.

health informatics The science of how health information is technically captured, transmitted, and utilized.

health information Basic data (e.g., age, gender, height, weight), clinical conditions (e.g., diabetes, asthma), and many other health data about patients and their family health histories.

health information administrator Directs and controls the activities of the medical record department.

health information personnel Administrators, technicians, transcriptionists, and medical librarians who work together to manage an information system that meets medical, administrative, ethical, and legal requirements.

health information technician Specialist who organizes and evaluates health records for completeness and accuracy.

health information technology (HIT) Broad concept that encompasses an array of technologies to record, store, retrieve, protect, share, and analyze health information.

health literacy The ability of an individual to obtain, process, and understand health information and services needed to make appropriate health decisions.

health maintenance organization (HMO) Insurance provider that administers basic and supplemental health maintenance and treatment services to enrollees who pay a fixed fee.

health outcomes Health status of an individual or community as a result of preventive public health programs or medical intervention.

Health Professional Shortage Area (HPSA) A term that encompasses regions or zones identified by the Health Resources and Services Administration Shortage Designation branch of the HHS as medically underserved; populations who lack access to primary care, dental, or mental health providers; and groups who face economic, cultural, or linguistic barriers to health care.

health professions Involving patient care, a variety of healthcare careers that focus on providing direct care to the patient.

health promotion Education to help clients reduce the risk of illness, maintain optimal function, and follow healthy lifestyles through a wide variety of assistance and activities.

health psychologist Promotes good health through health maintenance counseling programs designed to help people achieve health-oriented goals, such as to stop smoking or lose weight.

health physicist Monitors health hazards and safe use of ionizing radiation in research or patient care, for example radiation treatment for cancer.

health record An ordered set of documents or a collection of data that contains a complete and accurate description of a patient's history, condition, diagnostic and therapeutic treatment, and results of treatment.

Health Resources and Services Administration (HRSA) Agency of HHS with responsibility for improving access to health care for people who are geographically isolated or economically or medically vulnerable.

health savings account (HSA) A form of nontaxable savings that can be used to pay for medical care, often used by individuals in combination with high-deductible health plans (HDHPs).

health team A team of health personnel, each with a specialized function, brought together in accordance with the needs of the client and his or her family.

healthy behavior An action taken to attain, maintain, or regain good health and to prevent illness.

healthcare administrator An individual who plans, directs, coordinates, and supervises the delivery of health care. Sometimes referred to as a healthcare executive.

hearing aid dispenser Most states require that individuals who dispense hearing aids be licensed; some states may require that audiologists who fit hearing aids obtain a hearing aid dispenser license.

hearing impairment An inability to hear speech and other sounds clearly; an inability to understand and use speech in communication; or the inability to hear speech and other sounds at all.

hematology specialist and technologist Technician who examines blood cells under a microscope in order to identify diseases of the blood.

high-deductible health plan (HDHP) A health insurance plan that requires individuals to pay a set amount of healthcare costs at the beginning of each calendar year before the health plan covers the costs. Usually premiums are lower than traditional health plans.

high-frequency transducer Ultrasound transducer used exclusively for the study of breast tissue.

histology technician/histotechnician Technician who cuts and stains tissue specimens for microscopic examination by pathologists.

histology The study of human tissue.

Hobby Lobby v. Burwell A U.S. Supreme Court ruling in favor of Hobby Lobby, a chain of craft stores owned by a Christian family that opposes the use of contraceptives. As a result of the ruling a closely held corporation can opt out of the requirements to cover the cost of contraceptives for female employees.

Holter monitoring A portable device that makes a continuous record of electrical activity of the heart in order to detect episodes of abnormal heart rhythms.

home and community-based services (HCBS) Option for state Medicaid programs to cover the cost of providing health and personal care services for the elderly or disabled at home.

home health agency (HHA) An agency that provides part-time nursing and medical care in patients' homes.

home health aide Direct care worker who works with patients needing long-term care and typically works for certified home health or hospice agencies that receive government funding. For all intents and purposes, terms such as *health aides*, *home care aides*, *home health aides*, *nursing aides*, *personal aides*, and similar terminologies are treated interchangeably. However, depending on the agency that provides such care, the wage per hour and components of specific tasks expected will be clearly defined for a variety of reasons.

home health care Supportive care provided in one's home.

home health nurse Provides at-home nursing care for patients, often as follow-up care after discharge from a hospital or from a rehabilitation, long-term care, or skilled nursing facility.

hospice A treatment regimen that helps manage pain and other symptoms associated with dying when conventional curative treatment is no longer of value.

hospice and palliative care medicine (HPM) Medical care to control pain and other symptoms in those with life-limiting or serious illness.

hospice and palliative care social worker Provides resources and emotional support for patients and their families when there is a serious illness or at the end of life.

hospitalist Physician (or other primary care provider) who manages patients during the time of hospitalization, including admitting the patient, coordinating care during hospitalization, and following up after discharge.

hospital nurse Provides bedside care to patients admitted to a hospital.

Hospital Readmission Reduction Program (HRRP) A program under the Affordable Care Act to improve quality and reduce costs of care for patients readmitted to the hospital for pneumonia, congestive heart failure, or acute myocardial infarction. Medicare reduces prospective payments to hospitals that fail to meet the criteria for readmission for these three diagnoses.

hospital system Organization that includes more than one hospital or one hospital plus other healthcare organizations such as skilled nursing facilities.

Human Genome Project An international research project that sequenced and mapped all human genes and allows prediction of illness and adverse drug response.

Human Service Board-Certified Practitioner (HS-BCP) Recognized as having met educational and experience requirements to work in human services.

human service workers and assistants Individuals who help social workers, healthcare workers, and other professionals to provide services to people.

Immunology scientists and technologists Specialists with training in the study of the human immune system.

Indian Health Services (IHS) Agency within HHS that provides healthcare services for Native Americans and Alaskan Natives.

Individualized Supervised Practice Pathways (ISPPs) Option for Didactic Program in Dietetics to include supervised clinical experience needed to sit for the registration exam.

industrial ecologist Evaluates the impact of industry on the environment and the costs and benefits of specific programs/processes on the industry and the environment.

industrial or occupational hygienist Develops and monitors factors and stresses in the workplace that may cause injury, illness, or impaired health.

industrial psychologist Uses scientific techniques to deal with problems of motivation and morale in the work setting.

infant mortality The number of deaths in children less than one year of age per 1,000 live births; reflects the quality of health care.

infection control A discipline focusing on preventing the spread of healthcare-associated infections.

infectious disease Illness caused by pathogenic viruses, fungi, or bacteria and transmitted by person-to-person contact or through a vector such as an infected mosquito, e.g., malaria or West Nile virus.

informed consent Process of a patient giving permission to a healthcare provider to provide services in advance, for example before 1) an invasive procedure, 2) administering an experimental drug, or 3) enrolling in a research trial.

injury prevention Important part of school and community athletic programs insuring that appropriate equipment is worn when participating in team sports; common devices are helmets, elbow and knee pads, and wrist guards.

injury-prevention device Device used by athletes to prevent injury or to stabilize movement after injury to the feet, ankle, knee, wrist, or spine.

inpatient psychiatric services for individuals under age 21 Residential treatment facility for children and adolescents with acute mental illness, substance abuse disorder, or emotional problems.

inspector Official who ensures products are fit for human consumption in accordance with federal laws governing the wholesomeness and purity of meat, poultry, and egg products.

insurance claim Form and documentation submitted to insurance companies to request compensation for medical expenses.

instrumental activities of daily living (IADLs) Complex self-care activities that are used to evaluate independence of disabled persons or older adults; examples are shopping, preparing meals, managing finances, and taking medications as prescribed.

intermediate care facility for people with intellectual disability (ICF/ID) A facility that provides personal care and social services.

internal medicine The branch of medicine that deals with the diagnosis and (nonsurgical) treatment of diseases of the internal organs (especially in adults).

internship Supervised, practical experience to aid professional development.

interoperability The mechanism of electronic communication among organizations so that data can be incorporated from one system into another.

interventional X-ray machine High-resolution fixed X-ray equipment that allows physicians to diagnose and perform surgery in a minimally invasive manner.

invasive cardiology A heart specialty that requires the insertion of probes or other instruments into the patient's body.

ionizing radiation Any radiation, as a stream of alpha particles or X-rays, that produces ionization as it passes through a medium.

kinesiotherapist Formerly corrective therapist; uses rehabilitative exercise, reconditioning, and physical education to help clients unable to move because of injury or physical disability to become more mobile.

King v. Burwell The U.S. Supreme Court ruled in favor of the government on June 25, 2015 in a dispute over whether individuals who purchased health plans through a a federal exchange (instead of a state exchange) would be eligible for premium subsidies.

laboratory technician Dental, medical, and ophthalmic technician who produces a variety of medical devices to help patients see clearly, chew and speak well, or walk better.

language disorder An inability to use the symbols of language through appropriate grammatical patterns and the correct use of speech sounds.

laser surgery Surgery performed on the eyes using a laser tool, usually to correct a vision defect such as myopia (nearsightedness).

Liaison Committee on Medical Education (LCME) National accrediting agency for medical education programs in the United States and Canada.

licensed clinical social worker (LCSW) Clinical social worker who has met the requirement for supervised practice to become licensed to practice independently.

licensed practical nurse/licensed vocational nurse (LPN/LVN) Care for people who are sick, injured, convalescent,

or disabled under the direction of physicians and registered nurses.

licensing A right conferred by a governmental body to practice an occupation or provide a service.

licensure The granting of a license by official or legal authority to perform medical acts and procedures not permitted by persons without such a license.

life expectancy Represents the average number of years of life that could be expected if current death rates were to remain constant; used as a gauge of the overall health of a population.

lifestyle Behaviors that impact the incidence and development of disease, for example, diet, physical activity, sexual activity, and the use of alcohol, illegal drugs, and cigarettes.

livestock health General condition of animals kept or raised for meat, milk, eggs, or fiber.

longevity The length of human life; longevity usually refers to living past the estimated life expectancy or the average age of death.

long-term services and supports (LTSS) System of providing health and personal care support for the disabled, elderly, or others with chronic health problems in people's homes instead of an institution.

low-vision rehabilitation The restoration to normal or near-normal function in a patient with low vision.

LPN-to-BSN Training programs that allow licensed practice nurses (LPN) to obtain a bachelor's degree in nursing (BSN).

lung capacity The volume and flow of air during inhalation and exhalation.

MD *See* Doctor of Medicine.

magnetic resonance scanner/imaging (MRI) A noninvasive diagnostic technique based on nuclear magnetic resonance of atoms within the body induced by the application of radio waves to produce computerized images of internal body tissues.

maldistribution A situation in which new health workers find it difficult to obtain jobs in their community, while other communities cannot find enough workers to fill the same type of healthcare jobs.

malpractice Professional misconduct.

mammography Use of X-rays to screen for cancer in breast tissue.

managed care organization (MCO) Healthcare plan with established cost controls and designed to improve quality of care.

management dietitian nutritionist Responsible for large-scale food services in hospitals, company cafeterias, prisons, schools, and colleges and universities.

manual dexterity The ability to quickly make coordinated movements of the hands and arms.

marketing Promoting, selling, and distributing a product or service.

Massage and Bodywork Licensing Examination (MBLEx) Licensing exam used by nearly all state licensing boards in the U.S.; licensure gives massage therapists the legal right to practice.

massage therapy Use of touch, pressure, and/or manipulation to ease pain or tension and reduce stress.

Master certified health education specialist (MCHES) An advanced credential for health educators with five years of experience in the field and successful completion of a competency exam.

master patient index A listing or database of all the patients treated by the healthcare provider, typically arranged according to an identification process.

master of science in nursing (MSN) An advanced nursing degree that allows a nurse to obtain APRN status.

master of science in social work (MSW) Advanced degree for social workers.

Meals on Wheels Service that supplies one hot meal a day to people who cannot or do not leave their homes.

medical (health science) librarian Provides quick and efficient access to large volumes of information and materials to keep professional staff and personnel abreast of developments, new procedures and techniques, and other relevant data.

Medicaid Healthcare program for low-income pregnant women, seniors at 100% of the federal poverty level, and individuals with disabilities; jointly funded by federal and state governments.

Medicaid expansion The Affordable Care Act gave individual states the option of expanding Medicaid to those at 133% of the federal poverty level.

Medicaid spousal impoverishment provisions A program that allows for protection of a couple's financial resources so that a spouse can continue living in the community when his or her partner requires nursing home care.

medical and clinical laboratory scientist (technologist) and technician Performs complex chemical, biological, hematological, immunological, and bacteriological tests of body fluids and tissue to assist physicians in making a medical diagnosis and to evaluate effectiveness of treatment.

medical and health services managers Executives who plan, direct, coordinate, and supervise the delivery of health care.

medical assistant Performs administrative and clinical tasks to keep the offices of physicians, podiatrists, chiropractors, and other health practitioners running smoothly.

medical billing The process of submitting and following up on claims to insurance companies in order to receive payment for services rendered by a healthcare provider.

Medical College Admission Test (MCAT) Exam required of students applying for schools of medicine, osteopathy, and veterinary medicine.

medical doctor (MD) A physician who has obtained a Doctor of Medicine (MD) degree at an accredited allopathic medical school.

medical equipment Devices used by health professionals to make a diagnosis, such as X-ray machines; to treat, for example lasers used to repair detached retina; or for life support, for example, ventilators.

medical home The primary source of ongoing preventive care or disease management for an individual or family.

medical math The application of mathematical computations related to healthcare procedures.

medical reimbursement Payments made to healthcare providers in return for services.

medical secretary Responsible for the orderly, efficient operation of the office.

medical social worker A social worker who usually works in a hospital setting to find resources for patients after being discharged from the hospital.

medical technology The procedures, equipment, and processes by which medical care is delivered.

medical technology/medical laboratory science Health care involved with laboratory analysis in areas of clinical chemistry, hematology, microbiology, and immunology; lab analysis used in the diagnosis and treatment of disease.

medical terminology Specialized terminology used in medicine that allows healthcare providers to communicate specific details of a patient's condition in a precise manner.

medical transcriptionist (MT) An allied health professional that deals in the process of transcription or converting voice-recorded reports as dictated by physicians and/or other healthcare professionals into text format.

Medicare Provides health care to the disabled and those over 65 years of age

Medicare Advantage Plan Private health insurance company contracts with Medicare to provide all Part A (hospital) and Part B (outpatient) benefits including prescription drugs.

Medicare reimbursement Repayment from Medicare for out-of-pocket medical expenses.

Medicare Shared Savings Program Accountable care organizations (ACOs) were created under the Affordable Care Act to facilitate coordination and cooperation among providers and hospitals to improve quality of care and reduce unnecessary costs for Medicare fee-for-service beneficiaries.

Medicare Supplemental Health Insurance Health insurance purchased by Medicare beneficiaries to cover the cost of copayments for hospital and outpatient health services.

medication profile A computerized record of the customer's drug therapy.

Ménière's disease Disorder of the inner ear that causes dizziness (vertigo), hearing loss, and ringing in the ears.

mental health A state of emotional and psychological well-being.

mental health and substance abuse social worker Assesses and treats individuals with mental illness or substance abuse problems, including abuse of alcohol, tobacco, or other drugs.

Mental Health Parity and Addiction Equity Act of 2008 Federal law that requires that health insurance policies include coverage for mental illness, including outpatient counseling.

mental health services Diagnosis and treatment of patients with mental or emotional illnesses, including alcohol or substance abuse.

Methicillin-resistant *Staphylococcus aureus* (MRSA) A strain of the *S. aureus* bacteria that is resistant to many antibiotics. In community settings, MRSA is usually confined to the skin; in medical facilities, MRSA causes life-threatening bloodstream and surgical site infections and pneumonia.

microbiology specialist A specialist with training in the study of bacteria and other microorganisms.

middle-level health worker Health professional with skills beyond those of a registered nurse and short of those of a licensed physician.

mine examiner A health and safety officer who inspects mines for compliance with federal and state safety regulations.

minimum essential coverage A standard set by the Affordable Care Act for the kind of coverage health insurance companies must provide in all policies.

mobile technology Equipment that can be carried or wheeled from place to place.

MRI technologist Technologist radiographer who specializes in magnetic resonance imaging.

multidisciplinary team Medical group comprised of several different specialties that evaluate the patient in terms of their individual specialties and work together to develop goals that meet the patient's needs.

muscle injuries Damage or injury to any of the muscles in the body. The various types of muscle injuries are categorized as strains, bruises (contusions), detachment injuries

(avulsions), and exercise-induced injury or delayed-onset soreness. The thigh and back muscles are most commonly injured.

Music Therapist-Board Certified (MT-BC) Credential that identifies music therapists who have demonstrated knowledge, skills, and abilities necessary to practice music therapy.

music therapy Music is used within a therapeutic relationship to address the physical, psychological, cognitive, and social needs of individuals.

mutation Change in DNA sequence; may increase risk for birth defect or disease.

National Accrediting Agency for Clinical Laboratory Science (NAACLS) International accrediting agency that approves educational programs for clinical laboratory sciences.

National Association of Free Clinics (NAFC) A nonprofit organization in the U.S. that supports local and regional organizations and volunteers that provides medical, dental, pharmacy, and behavioral health care to the economically disadvantaged who also are uninsured.

National Athletic Trainers' Association (NATA) A national association that distributes information about athletic trainers in education, services, and counseling and represents their interests in employment, accomplishments, and similar attributes.

National Board of Certification and Recertification for Nurse Anesthetists (NBCRNA) Organization that offers a national certification exam for nurse anesthetists seeking to obtain or keep their certification and licensure.

National Center for Health Statistics A division within the CDC that collects data on factors contributing to health risks.

National Certification Board for Therapeutic Massage & Bodywork (NCBTMB) Certifies licensed massage therapists; certification is the highest voluntary credential for massage therapists.

National Coalition of Creative Arts Therapies Associations, Inc. (NCCATA) Coalition of six creative art therapies associations that promote the arts as primary therapeutic treatment. Included are art therapy, dance/movement therapy, drama therapy, music therapy, poetry therapy, and psychodrama.

National Collegiate Athletic Association (NCAA) An organization that represents the interests of college athletic programs and the students who participate in them.

National Commission for Health Education Credentialing, Inc. Agency that offers certification for the certified health educator specialist (CHES) or master certified health education specialist (MCHES).

National Commission on Certification of Physician Assistants (NCCPA) Agency that offers certification for physician assistants via the PANCE exam.

National Council Licensure Examination Either of two licensing exams required to become a registered nurse (NCLEX-RN) or a licensed practical or vocational nurse (NCLEX-PN).

National Council for Therapeutic Recreation Certification (NCTRC) Demonstrates knowledge, skill, and ability recognized as essential for therapeutic recreation practice.

National Environmental Health Association (NEHA) Agency that offers certification for environmental health workers.

National Environmental Health Science and Protection Accreditation Council (EHAC) Agency that accredits educational programs in environmental health science.

National Federation of Independent Business v. Sebelius A June 2012 ruling by the U.S. Supreme Court that upheld the individual mandate—one of two provisions of the Affordable Care Act that were challenged in court—but rejected the other challenged provision and made it optional for states to expand Medicaid.

National Federation of Licensed Practical Nurses Agency that offers specialty certification in IV therapy and gerontology.

national health expenditure (NHE) Estimates of total healthcare spending in the United States; includes measurement of expenditures for healthcare goods and services, public health activities, government administration, investment related to health care, and the net cost of health insurance.

National Health Services Corps (NHSC) An organization that negotiates agreements with primary care medical, dental, and mental health professionals to work in underserved areas with limited healthcare access in exchange for college loan repayments and scholarships.

National Institute of Environmental Health Sciences (NIEHS) One of the institutes of the National Institutes of Health that evaluates environmental factors, such as pollution, that impact the development and progression of human disease.

National Institutes of Health (NIH) Agency of the HHS that conducts research to discover causes and treatments for diseases.

National Institute for Occupational Safety and Health (NIOSH) Division within the Centers for Disease Control (CDC); conducts research and makes recommendations to prevent worker injury and illness.

National League for Nursing Professional organization of nursing faculty.

National Prevention Council Created as a result of the Affordable Care Act; represented by 20 federal departments, agencies, and offices, and chaired by the Surgeon General.

National Registry of Emergency Medical Technicians (NREMT) Certifies emergency medical service providers at five levels: first responder; EMT-Basic; EMT-Intermediate, which has two levels called 1985 and 1999; and paramedic.

National Society of Genetic Counselors (NSGC) Professional organization for genetic counselors.

navigator Individual mandated by the Affordable Care Act whose role is to assist consumers in applying for health insurance plans through the state or federal Health Exchange/Marketplace. Also called *patient navigator*.

NCLEX *See* National Council Licensure Examination.

negligence The failure to do something that a reasonably prudent person would do in the same or similar situation; alternatively, doing something that a reasonably prudent person would *not* do in the same or similar situation.

negotiation To work with another and arrive at a settlement.

network Group of hospitals, physicians, and other healthcare providers as well as insurers and community agencies that deliver health services within a geographic area.

neuropsychologist Studies the relationship between the brain and behavior.

neurosonographer Ultrasound technician who focuses on the nervous system, including the brain.

newborn screening Testing of newborns to determine the presence of certain diseases that cause health or development problems.

noninvasive procedure Technical care that does not require the insertion of probes or other instruments into the patient's body.

nuclear cardiology Nuclear imaging technique that involves using radioactive drugs to obtain images of the heart.

nuclear medicine Branch of radiology that uses radionuclides in the diagnosis and treatment of disease.

nuclear medicine technologist Operates imaging devices to perform tests that require the use of radionuclides for diagnosis.

nuclear pharmacist Pharmacist who prepares and dispenses radioactive pharmaceuticals.

nurse anesthetist Nurse who specializes in anesthesia and pain relief.

nurse-midwife Nurse who specializes in women's health and obstetrics, particularly labor and delivery.

nurse practitioner (NP) An advanced practice registered nurse with a master's or a doctoral degree who has a dramatically expanded scope of practice beyond the registered nurse.

nursing assistant A trained professional who supports the nursing staff in hospitals, long-term care facilities, rehabilitation clinics, and doctor offices.

nursing facility services (NFS) Provided by Medicaid certified nursing homes; provides three types of services: skilled nursing, rehabilitation, and long-term support services.

nutritionist Professional trained in applying the principles of nutrition to food selection and meal preparation.

nutrition support pharmacist Pharmacist that helps determine and prepare nutrition formulas given intravenously.

Obama Care A common term used to describe the Affordable Care Act; named after President Barack Obama, who signed the bill into law.

obesity The condition of having a body mass index (BMI) that is higher than the BMI considered appropriate for a given height that occurs due to a complex combination of behavioral, genetic, metabolic, and environmental factors.

obstetric and gynecologic sonographer Ultrasound technician who specializes in the female reproductive system.

occupational health and safety technologist (OHST) certification Worker in occupational health who has successfully completed the certification exam.

Occupational Safety and Health Administration (OSHA) Division of the U.S. Department of Labor that monitors safety in the workplace.

occupational therapist Helps individuals with mental, physical, developmental, or emotional disabilities learn to perform the activities of daily living.

occupational therapist, registered (OTR) Credential awarded to those who graduate from an accredited educational program and pass a national certification examination.

occupational therapy Treatment for those recuperating from illness that encourages rehabilitation by performing the activities of daily life.

occupational therapy aide/assistant Helps patients develop, recover, and improve skills needed for activities of daily living and for being gainfully employed; works under the supervision of an occupational therapist.

ocular disease Eye disease that must be treated by an optometrist.

old-old Those over 85 years of age.

Older Americans Act (OAA) of 1973 An addition to a program established by the U.S. Congress in 1965 to provide resources and supports for the elderly, enacted primarily to create the Area Agency on Aging.

Omnibus Budget Reconciliation Act of 1987 (OBRA 87) A law passed by Congress that required Medicare and Medicaid

standards and certification procedures for long-term care facilities to merge; ICF/ID standards were upgraded to be the same as skilled care facilities.

ophthalmic laboratory technicians Professional that grinds and creates lenses for glasses based on orders from dispensing opticians.

ophthalmic medical assistant A medical assistant who helps an ophthalmologist provide eye care.

ophthalmic photography Involves the use of specialized equipment and techniques to photograph disorders and injuries of the eye.

ophthalmologist A medical doctor specializing in treating diseases or injuries of the eye. Like optometrists, they also provide basic vision care, but they are also able to perform more advanced treatments such as surgery.

optics Coursework that must be completed by those who wish to work in the field of optometry.

optometric medical assistant A medical assistant who helps an optometrist provide eye care.

optometrist A medical professional that provides vision care to patients.

Optometry Admissions Test (OAT) A standardized exam that measures academic ability and scientific comprehension.

oral and maxillofacial surgeon A dentist who operates on mouths, jaws, teeth, gums, neck, and head.

oral pathologist A dentist who diagnoses diseases of the mouth.

oral surgeon A dentist who operates on the mouth and jaws.

orderly Attendant in a hospital responsible for the non-medical care of patients and the maintenance of order and cleanliness.

orientation and mobility (O&M) instructor Teaches people with blindness or visual impairments to move about effectively, efficiently, and safely in familiar and unfamiliar environments.

orthodontics The largest group of dental specialists, work to straighten teeth.

orthotics and prosthetics The evaluation, fabrication, and custom fitting of artificial limbs and orthopedic braces.

orthotic and prosthetic technician One who provides technical support to a certified individual in creating, repairing, and maintaining orthoses and prostheses.

orthotist One who designs and fits corrective braces, inserts, and supports for body parts that need straightening or other curative functions.

osteopathic manipulative medicine (OMM) Use of hands to manipulate muscles and joints to diagnose and treat common symptoms such as headache, backache, or muscle strain.

osteopathic medicine A branch of medical theory that uses preventive and holistic therapies to treat injuries and illness.

outcomes assessment The use of standardized, objective measures to gauge a patient's functionality at various stages of treatment.

out-of-pocket costs Cost of healthcare services not covered by private health insurance, Medicaid or Medicare, or Children's Health Insurance Program.

oxygen/oxygen mixture Treatment of gases to help patients suffering from breathing disorders.

palliative Intended to reduce or alleviate, but not cure.

palliative care Treatment of symptoms associated with a life-limiting or serious illness including pain and inability to swallow.

paramedic The fourth level of a four-tier emergency medical technician category who perform lifesaving interventions with both basic and advanced equipment typically found in an ambulance.

paraffin bath A form of pain relief that uses heated wax for medical purposes.

Patient Care Partnership Expectations for care of hospitalized patients by hospital staff; developed by the American Hospital Association in 2003.

patient navigator *See* navigator.

patient portal An online application that allow patients to interact and communicate with their healthcare providers.

patient registration process An activity involving obtaining pertinent personal, financial, and social information from the patient about their medical history, contact information, and insurance billing data.

payment reform Changes in the way healthcare services are reimbursed. Traditionally, providers were paid under the fee-for-service model, which is replaced by accountable care organizations and reimbursement based on outcomes to provide incentives focused on quality of care instead of volume as a way of reducing costs.

pediatric dentist A dentist whose work focuses on children and special-needs patients.

Pediatric Nursing Certification Board Agency that certifies nurses as pediatric specialists.

pediatric oncology Medical care of children with cancer.

pediatric specialty certification® (PASC®) Certification by audiologists that specialize in pediatrics; has met experience requirements and successfully passed the certification exam.

pediatrics Medical care of infants, children, and young adults.

pedigree Family tree of health conditions, including cause and age of death of biological family members.

pedodontics Dentistry for children (*see* also pediatric dentist).

pedorthists One who selects, modifies, or creates footwear to address conditions of the foot and ankle.

perceptual skills Awareness of the elements of environment through physical sensation.

periodontics Specialize in treating the gums.

personal and home care aide Direct care worker who works with patients needing long-term care and is employed by public and private agencies that provide home care services.

personal care and service occupations Professionals who provide direct care services to individuals unable to care for themselves, e.g., disabled persons or older adults.

personnel psychologist A psychologist who applies professional knowledge and skills to the hiring, assignment, and promotion of employees to increase productivity and job satisfaction.

pharmaceutical chemistry Physical and chemical properties of drugs and dosage forms. Also known as pharmaceutics.

pharmaceutical fees Established as part of the Affordable Care Act and monitored by the Internal Revenue Service. An annual fee imposed on businesses that manufacture or import branded prescription drugs.

pharmaceuticals Medicinal drugs.

pharmacoeconomics The analysis of the costs and benefits of different drug therapies.

pharmacology The study of the effect drugs have on the human and animal bodies.

pharmacotherapist Health professional that specializes in drug therapy and works closely with physicians.

pharmacy administration The study of business aspects of pharmacy use and management.

pharmacy aide/assistant Often a clerk or cashier who primarily answers telephones, handles money, stocks shelves, and performs other clerical duties.

pharmacy informatics The application of information technology to the use of medications to improve patient care.

pharmacy technician Technician who helps licensed pharmacists provide medication and other healthcare products to patients.

philosophy Most basic beliefs, concepts, and attitudes of an individual or group.

phlebotomist Individual trained to draw blood from a patient for clinical or medical testing, transfusions, blood donations, or research.

photosensitivity Sensitivity to light from the sun.

physical disability A limitation on a person's physical functioning, mobility, dexterity, or stamina. Its definition can vary, depending on whether it is a medical, legal, cultural, or other issue.

physical therapist Professional trained to provide services that help restore function, improve mobility, relieve pain, and prevent or limit permanent physical disabilities.

physical therapist aide A professional who helps make therapy sessions productive, under the direct supervision of a physical therapist or physical therapist assistant.

physical therapist assistant Under the direction and supervision of physical therapists, he or she provides part of a patient's treatment.

physical therapy The treatment of disease, injury, or deformity by physical methods such as massage, heat treatment, and exercise rather than by drugs or surgery.

physician assistant (PA) A medical professional who may practice preventive, diagnostic, and therapeutic medicine under the supervision of a physician or surgeon. Responsibilities may include taking a medical history, conducting a physical exam, and ordering and interpreting lab tests and X-rays required for making a diagnosis.

Physician Assistant National Certifying Examination (PANCE) Examination that graduates of physician assistant training programs must pass to be certified and licensed in their profession.

physician practice manager Healthcare manager for a physician or group of physicians. Responsible for human resources, health information, compliance to regulations for patient safety and confidentiality, and overall business management.

physiology The study of how organisms and their body parts carry out the normal physical functions that allow them to exist.

picture archiving and communication system (PACS) Technology that captures and integrates diagnostic and radiological images from various devices, stores them, and disseminates them to a health record, a clinical repository, or other points of care.

podiatric medical assistant A medical assistant who works closely with foot doctors.

policies Acceptable procedures of a governmental, corporate, or nonprofit body.

polysomnography The testing of multiple sleep parameters to diagnose sleep disorders.

positron emission scanners/tomography (PET) Nuclear medicine imaging technique that produces a three-dimensional image of body processes.

Preadmission Screening and Resident Review (PSRR) Screening for mental illness or intellectual disability required for all admissions to Medicaid-certified nursing homes.

predictive genetic counseling Counseling provided when DNA changes are present that increase a person's chances of developing disease, for example, Alzheimer's disease.

pre-existing medical condition Medical diagnosis present at the time health insurance is purchased.

preferred provider organization (PPO) Health insurance plan that covers the cost of providers within a network and outside of the network although copayments by the patient are higher for out-of-network providers.

premium The cost of health insurance covered by an employer, shared with the employee or purchased through a Health Exchange.

prenatal screening Testing done of amniotic fluid during pregnancy to identify fetus with certain genetic diseases.

prescribed drug regimen Medications prescribed by one's healthcare provider to manage an acute or chronic illness.

prevention of work-related injuries One common injury at work is carpal tunnel syndrome, where a person develops a painful wrist because of the malfunction of certain nerves. It is common among workers who make repetitive motions with their hands, for example, assembly-line workers and grocery packers. There are preventive measures including rotating job types and using specialized bandages.

primary care Health care that focuses on prevention, early detection, and treatment, and that takes general responsibility for individual patients.

primary care physicians, providers, or practitioners (PCPs) Healthcare practitioners who provide healthcare services for common injuries or illnesses; includes physicians, advanced practice registered nurses, and physician assistants.

primary care sports medicine physicians A physician trained in internal medicine or family medicine with a specialty in sports medicine; provides medical care for professional athletes, amateur athletes, and the physically active to achieve optimal performance and avoid injuries.

privacy officer An individual responsible for developing and implementing requisite privacy policies and procedures, receiving complaints, and disseminating information about an entity's privacy practices.

private hospital A hospital funded and operated by private corporations, religious organizations, or medical groups instead of government funds.

private health insurance Health insurance provided through an employer or purchased by an individual through another group such as a professional organization.

professional An individual with specialized learning engaged in a specified activity as an occupation.

professional certification Granted by health professionals' national organizations to ensure health professionals meet established levels of competency.

professionalism The conduct, character, skills, and judgment of a trained person.

professional registration The listing of certified health professionals on an official roster kept by a state agency or health professionals' organization; some health professionals' organizations use the term "registration" interchangeably with "certification."

program An organized set of activities intended to produce a desired outcome, e.g., educational programs improve education.

Program of All-Inclusive Care for the Elderly (PACE) Program that provides comprehensive preventive, primary, acute, and long-term care services so older individuals with chronic care needs can continue living in their local community.

proprietary hospital A hospital operated for the financial benefit of the persons, partnerships, or corporations that own them.

prosthetist One who designs, measures, fits, and adjusts artificial limbs for amputees and devices for people with musculoskeletal or neurological conditions.

prosthodontist A dentist who replacing missing teeth with permanent fixtures, such as crowns and bridges, or with removable fixtures such as dentures.

psychiatric aide Individual who works as part of a team to care for mentally impaired or emotionally disturbed individuals.

psychiatric genetic counseling Used to determine the risk for mental illness for individuals who have family members with behavioral or psychiatric disorders.

psychiatric or mental health technician Works as part of a team to provide care and treatment of emotionally or mentally disabled patients.

psychiatry The branch of medicine that deals with the diagnosis, treatment, and prevention of mental and emotional disorders.

psychological treatment Treatment aimed at changing the patient's interpersonal environment to alleviate symptoms of mental or emotional disturbance.

psychological variables The collection of factors that can affect or alter a person's coping and mental health.

psychology A scientific approach to gathering, quantifying, analyzing, and interpreting data on why people act as they do; it provides insight into varied forms of human behavior and related mental and physical processes.

psychometric psychologist Health professional that directly measures human behavior, primarily through the use of tests.

public health Focuses on the protection of the environment including air, food, and water and improvement of community health.

public health dentistry Community dental health.

public hospital A hospital owned by local, state, or federal government or agencies.

qualified health plan (QHP) Under the Affordable Care Act, a QHP is certified by the Health Insurance Marketplace to include essential health benefits.

quality improvement analyst One who analyzes, reviews, forecasts, trends, and presents information directed at improving the quality of patient care.

radiation therapy Treatment of disease by exposure of diseased tissue to radiation.

radiologic technician/radiographer/X-ray technician Specialist who takes X-rays and administers nonradioactive materials into patients' bloodstreams for diagnostic purposes.

radiologic technologist Specialist who performs complex imaging procedures.

radiologist Diagnoses and treats illness by the use of X-rays and radioactive materials.

radionuclides Unstable atoms that emit radiation spontaneously.

radiopharmaceutical Radioactive drug.

radiopharmacist Applies the principles and practices of pharmacy and radiochemistry to produce radioactive drugs that are used for diagnosis and therapy. (*See also* nuclear pharmacist.)

recreational sports Those activities where the primary purpose of the activity is participation, with the related goals of improved physical fitness, fun, and social involvement often prominent.

recreational therapy A form of therapy that uses medically approved activities such as sports, games, and field trips, to treat or maintain the physical, mental, and emotional well-being of patients.

recreation therapist (RT) Practitioners in the field of recreation therapy use activity-based interventions to address the needs of clients with illnesses or disabilities as a means to psychological and physical health and recovery.

refugee An individual who has been displaced from his or her home country due to factors affecting safety and well-being, e.g., conflict, natural disaster, food or economic insecurity, or persecution.

registered art therapist (ATR) Credential that ensures that an art therapist has successfully completed a graduate-level program in art therapy and completed supervised post-graduate clinical experience.

registered behavior technician™ (RBT™) Paraprofessional with 40 hours of post secondary training; works under the supervision of a certified behavior analyst to carry out treatment programs.

registered clinical exercise physiologist (RCEP) Credential awarded to those with a master's degree including 600 clinical hours and successful completion of the certification exam.

registered dance/movement therapist (R-DMT) A credential that represents a basic level of competence in dance/movement therapy and qualifies the therapist to be employed as a dance/movement therapist in a clinical or educational setting.

registered dietitian nutritionist (RDN) Dietetic professional that has passed the registration exam after completing academic coursework and supervised clinical practice.

registered environmental health specialist or registered sanitarian (REHS/RS) Ensures clean air and safe food and water; manages sewage and hazardous materials; responds to natural disasters.

registered nurse (RN) Nursing professional who delivers therapy and treatment to patients as prescribed, educates patients and the public about various medical conditions, and provides emotional support to both patients and family members.

registered respiratory therapist (RRT) Credential awarded to CRTs who have graduated from advanced programs and passed two separate examinations.

registration The listing of certified health professionals on an official roster kept by a state agency or health professionals' organization.

rehabilitation The restoration of a person to normal or near-normal function after a physical or mental illness, including chemical addiction.

rehabilitation center A facility for providing therapy and training for rehabilitation.

rehabilitation psychologist Works with disabled persons, either individually or in groups, to assess the degree of disability and develop ways to correct or compensate for these impairments.

rehabilitative services Help people with disabilities achieve employment and independent living.

reimbursement To make a return payment to.

Religious Freedom Restoration Act of 1993 (RFRA) Limits the ability of the federal government to restrict the exercise of religious beliefs without compelling justification; used in defense of the right of businesses to be exempt from covering the cost of contraceptives for women in *Hobby Lobby v. Burwell*.

repetitive stress injuries (RSIs) Injuries that happen when too much stress is placed on a part of the body, resulting in inflammation (pain and swelling), muscle strain, or tissue damage. This stress generally occurs from repeating the same movements over and over again. RSIs are common work-related injuries, often affecting people who spend a lot of time using computer keyboards.

reproductive technology Methods used to assist couples with infertility to conceive.

research Collecting of information about a particular subject.

research dietitians nutritionist Nutritionist employed in academic medical centers or educational institutions, although some work in community health programs.

resident physician A physician licensed to practice medicine who works in the hospital or clinic under the supervision of an attending physician.

respiratory therapy technician Technician working under the supervision of physicians or respiratory therapists to evaluate and treat patients with breathing disorders.

RN-to-BSN A degree program that enables registered nurses who do not have a bachelor's degree to obtain a BSN more quickly than would be the case for those without an RN.

safety trained supervisor (STS) Occupational health worker who has worked as a supervisor for at least one year and successfully completed the certification exam.

Scholarship and Loan Repayment Program Health Resources and Services Administration (HRSA) administers the health professions loan repayment and scholarship program to help fund educational expenses and encourage health professionals to work in underserved areas of the U.S.

school health educator Professional who helps children and young people develop the knowledge, attitudes, and skills they need to live healthfully and safely.

school nutrition specialist (SNS) Option for certification for dietetic technicians working in school nutrition programs; conferred by School Nutrition Association.

school psychologist A psychologist concerned with developing effective programs for improving the intellectual, social, and emotional development of children in an educational system or school.

school social worker Social worker who serves as the link between students' families and the school, strives to ensure students reach their academic and personal potential.

Self-contained underwater breathing apparatus (SCUBA) Equipment that allows first responders to breathe underwater during a water rescue.

senior center Focal point for services and referrals to resources for the elderly; funded by the federal government as a result of the Older Americans Act.

shared responsibility for coverage Requirement of the Affordable Care Act for all Americans to have health insurance; if purchased through a Health Exchange/Marketplace to share the cost of premiums.

side effects A secondary and usually adverse effect of a medication or treatment.

Services for individuals age 65 or older in an institution for mental diseases (IMD) Inpatient, ongoing support services for those over 65 years of age who are intellectually or developmentally disabled or mentally ill.

skilled nursing facility (SNF) A nursing home that provides the level of care closest to hospital care.

skin puncture A procedure in which a needle is inserted into the skin in order to infuse a medication.

sleep study Records the physical changes that occur in the body while the patient is sleeping.

Small Business Health Options Program (SHOP) Part of the 2010 healthcare reform legislation; small businesses with up to 100 employees can purchase qualified coverage for employees through SHOP exchanges established at the state or regional level.

social and human service assistant Personnel who assists patients in obtaining services.

social psychologist Studies the effects of groups and individuals on the thoughts, feelings, attitudes, and behavior of the individual.

social work administrator An administrator who performs overall management tasks in hospital, clinic, or other setting that offers social worker services.

social work planner and policy maker Professional who develops programs to address such issues as child abuse, homelessness, substance abuse, poverty, and violence.

Social Security Act of 1965 Established Medicaid, health insurance for low-income individuals, and Medicare, health insurance for the disabled and those 65 years of age and older.

socioeconomic status (SES) Position or rank based on a combination of social and economic factors.

soft-tissue mobilization A form of therapy that seeks to loosen tightness and minimize pain through application of pressure and manual manipulation.

solo practitioner Physician who works in an independent setting instead of a group practice.

sonographer/ultrasound technologist An individual who collects reflected echoes and forms an image that may be videotaped, transmitted, or photographed for interpretation and diagnosis by a physician.

specialty board certification Areas of specialty for dietitian nutritionists in gerontology, pediatrics, renal nutrition, sports nutrition, oncology, or advanced clinical practice; certification requires experience and exam.

specialty certification in inoperative monitoring (BCS-IOM) Using electrophysiological methods to monitor the functional integrity of certain nerves, for example auditory nerves.

spectator sports Athletic events that attract more people as spectators than as participants.

speech disorder Identified by an individual's difficulty in producing speech sounds, controlling voice production, and maintaining speech rhythm.

speech-language pathologist (SLP) Assesses, diagnoses, treats, and helps to prevent disorders related to speech, language, cognitive-communication, voice, swallowing, and fluency.

speech pathologists and audiologists Speech pathologists specialize in identifying and treating speech problems such as stuttering. Audiologists specialize in clinical disorders of hearing.

speech recognition software Computer programs that collect spoken words, analyze those words, and present the results as data.

sport centers Area or locations in a private (e.g., spa, fitness) or public (e.g., stadium, school) environment where specific sports take place, for example, a football stadium, a tennis court, or a spa center.

sports medicine Specialty concerned with the prevention and treatment of injuries and disorders that are related to participation in sports.

standards for pure food from animal sources Measure of quality established to ensure safe food production from animal sources.

State-Based Marketplace (SBM) A place where individuals can purchase health insurance; can be a physical location or available online.

statistics Analysis of quantitative data to identify patterns.

strategic planning A careful, well-thought method of establishing goals, policies, and procedures.

stress testing Monitors the heart's performance while the patient is walking on a treadmill, gradually increasing the treadmill's speed to observe the effect of increased exertion on the heart.

substance abuse counselor Helps individuals overcome addictions to intoxicants and cope with life's stresses.

surgery The branch of medicine that deals with the diagnosis and treatment of injury, deformity, and disease by making physical alterations to tissue; surgical treatments range from minor procedures such as inserting stitches into external wounds to aid the healing process to major, invasive procedures used to alter, repair, remove, or transplant internal organs.

surgical technologist A technologist who assists in surgical operations under the supervision of surgeons, registered nurses, or other surgical personnel.

symptoms and response Evidence of disease and the bodies reaction to a course of treatment.

teaching certification or license A certification required for teaching in K–12 schools; must meet educational requirements.

technology Tools and systems used to deliver health care including computerized medical records, automated laboratory analysis, surgical robotics, and sophisticated diagnostic imaging—computerized axial tomography (CAT) and magnetic resonance imaging (MRI). Advances in technology contribute to the high cost of health care in the United States.

telecommunications Communication at a distance.

telemedicine The use of electronic communications and information technologies to provide or support clinical care at a distance.

telepractice Use of telecommunication technology to deliver professional services at a distance; used by speech language pathologists and other health professionals.

tests and measurements Methods of evaluating physical capacity and health.

therapeutic exercise Medically recommended physical activity designed to improve function, address an impairment, or improve quality of life.

therapeutic recreation (TR) The field of practice for recreation therapists who use different recreational activities to treat or restore to a level of functioning or independence in those with injury or illness.

third-party reimbursement Payment for services rendered by a provider to a person in which an entity other than the receiver of the service is responsible for the payment. For a doctor, a patient, and an insurance company in the

healthcare system, the insurance company is the third-party reimbursing the doctor's fee on the patient's behalf.

tinnitus Ringing or other noises in the ear; caused by noise exposure, ear infection, and often unknown causes; often associated with hearing loss.

transesophageal echocardiography A form of testing that involves placing a tube in the patient's esophagus to obtain ultrasound images.

transmissible diseases Infections caused by viruses or bacteria that are easily carried from one animal to another, or from animals to humans.

trauma center A hospital unit specializing in the treatment of patients with acute and life-threatening traumatic injuries.

TRICARE Military health system in the U.S. Department of Defense that provides health care for active and retired armed services personnel.

tumor registrar Individual that compiles and maintains records of patients who have cancer to provide information to physicians and for research studies.

ultrasound machine An electronic device that uses vibrations of the same physical nature as sound to form a two-dimensional image used for the examination and measurement of internal body structures.

uncompensated care Health care or services provided by hospitals or healthcare providers that do not get reimbursed; usually because patients don't have insurance or personal funds to pay for the cost of care.

U.S. Administration on Aging (AOA) Division within HHS agency, Administration for Community Living; provides a variety of home- and community-based services for older adults and disabled persons.

U.S. Department of Agriculture's Food Safety and Inspection Service (FSIS) The public health agency in the U.S. Department of Agriculture responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged.

U.S. Department of Health and Human Services (HHS) The U.S. government's principal agency for protecting the health of all Americans and providing essential human services, especially for those who are least able to help themselves.

U.S. Food and Drug Administration (FDA) Responsible for protecting the public health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, our nation's food supply, cosmetics, and products that emit radiation.

U.S. Medical Licensing Examination (USMLE) Exam required of medical school graduates to become licensed to practice medicine.

U.S. Public Health Service (PHS) Group of agencies that focus on making laws, allocating funds, and doing investigative work to protect the health of all Americans.

vascular technologist Technologist who assists physicians in the diagnosis of disorders affecting the circulation.

vendor-neutral archive A single, consolidated archive platform used to host files from different PACS software.

venipuncture A procedure in which a needle is inserted into a patient's vein in order to draw blood or infuse medication.

ventilator A machine that pumps air into the lungs.

vertigo Balance disorder with symptoms of dizziness or spinning; caused by ear infection, head injury, or certain medications.

veterinarian Cares for the health of pets, livestock, and animals in zoos, racetracks, and laboratories.

veterinary technologist/technician Technician who assists in the diagnosis and treatment of animals, usually in an animal hospital or clinic.

Veterinary College Admission Test (VCAT) Admission requirement for applicants to schools of veterinary medicine.

Veterinary Medical College Application Service (VMCAS) Agency that represents colleges of veterinary medicine and a central location for application to schools of veterinary medicine.

Veterinary Technician National Examination (VTNE) Used by most states for licensure of veterinary technicians.

vision rehabilitation therapist (VRT) Health professional who provides instruction for the visually impaired to use community resources and assistive technology.

vision therapy Treatment for those with vision issues.

vital statistics Information that chronicles certain life events, like birth and death.

VMD *See* Doctor of Veterinary Medicine.

voluntary hospitals Non-profit hospitals often owned and operated by a religious or other nonprofit organization.

volunteer EMT Depending on the legal requirements of a state, this term refers to "volunteer first aid, rescue, and ambulance squad," which provides emergency medical services without receiving payment for those services. In the United States, the oldest and traditional volunteer

emergency medical technician is a voluntary firefighter. To protect such persons or representatives from liability, many states standardize this term.

vulnerable populations Demographic groups that are at heightened risk of a disease or injury due to characteristics specific to that group.

wearable technology A small computer that can be worn on a person.

wellness and health promotion Wellness is a healthy balance of the mind, body, and spirit that results in an overall feeling of well-being. Health promotion refers to the improvement of health or wellness. For example, stopping smoking is one means to promote one's health and wellness.

work-related injuries Injuries that occur in the workplace, which are often covered by workers' compensation; includes physical, psychological, and stress-related injuries.

World Health Organization (WHO) Agency of the United Nations that directs and coordinates international health within the United Nations' system.

INDEX

Note: Italicized numbers indicate a term found in a figure or table

A

AAAs. *See* Area Agencies on Aging
AACC. *See* American Association of Community Colleges
AACN. *See* American Association of Colleges of Nursing
AACVPR. *See* American Association of Cardiovascular and Cardiopulmonary rehabilitation
AAHSL. *See* Association of Academic Health Sciences Libraries
AAMC. *See* Association of American Medical Colleges
AAPC. *See* American Association of Professional Coders
ABA. *See* applied behavior analysis
ABC. *See* American Board for Certification in Orthotics, Prosthetics, and Pedorthics
abdominal sonographers, 299
ABGC. *See* American Board of Genetic Counseling
ABMS. *See* American Board of Medical Specialties
ABO. *See* American Board of Opticianry
ABPP. *See* American Board of Professional Psychology
abuse, 96
ACA. *See* Affordable Care Act
Academy for Certification of Vision Rehabilitation & Education Professional (ACVREP), 266, 270
Academy of General Dentistry, 141
Academy of Health Information Professionals (AHIP), 361
Academy of Managed Care Pharmacy, 167
Academy of Nutrition and Dietetics (AND), 154, 158, 159, 160, 161
access, to healthcare
  increasing, ACA implementation and, 53, 54
  variation by state, 57
accountable care organizations (ACOs), 27, 58
  as fee-for-service organizations, 58–59
ACCP. *See* Approval Committee for Certificate Programs
accreditation, 95
Accreditation Council for Education in Nutrition and Dietetics (ACEND), 156, 159, 161
Accreditation Council for Genetic Counseling (ACGC), 254, 255
Accreditation Council for Occupational Therapy Education (ACOTE), 211
Accreditation Council for Pharmacy Education (ACPE), 165, 167
Accreditation Council on Optometric Education, 175
Accreditation Review Commission on Education for the Physician Assistant, 115, 117
Accrediting Bureau of Health Education Schools, 330, 367
accuracy, medical transcriptionists and, 357
ACEND. *See* Accreditation Council for Education in Nutrition and Dietetics
ACGC. *See* Accreditation Council for Genetic Counseling
ACHA. *See* American College of Healthcare Administrators
ACMPE. *See* American College of Medical Practice Executives
ACNM. *See* American College of Nurse-Midwives
ACOs. *See* accountable care organizations
ACOTE. *See* Accreditation Council for Occupational Therapy Education
ACPE. *See* Accreditation Council for Pharmacy Education
ACS. *See* American College of Surgeons
ACSM. *See* American College of Sports Medicine
activities of daily living (ADLs), 38, 266
acute infectious disease, 4
ACVREP. *See* Academy for Certification of Vision Rehabilitation & Education Professional
ADA. *See* American Dental Association
adaptive equipment, 208
addiction nurse, *122*
Addiction Technology Transfer Center Network, 237
administration, 274
  levels of, 275
administrative applications, of health IT, 69–70
administrative medical assistants, 364
ADN-to-BSN, 120
ADN-to-MSN, 120
adult day care services, 43
advanced airway devices, 284
Advanced Emergency Medical Technicians, 283
advanced practice registered nurses (APRNs), 102, 120
  additional information, 134–135
  advancement, 131
  certification and other requirements, 130–131
  CMs, 128, 131
  CNMs, 128–129, 131
  CNSs, 129, 130, 131
  CRNAs, 128, 131
  earnings, 132, *132*
  education, 130–131
  employment change, 131
  employment opportunities, 129–130, *130*
  employment trends, 131–132
  job prospects, 131, *131*
  licensure, 130
  NPs, 129, 131
  related occupations, 132, *132*
  training, 130
  work description, 127–129
  work environment, 129
advancement. *See* specific career
advance premium tax credit, 56
AEDs. *See* automated external defibrillators
AER. *See* Association for Education and Rehabilitation of the Blind and Visually Impaired
aerosols, 315

Affordable Care Act (ACA), 4, 7, 12, 13, 14, 16, 18, 22, 26, 28, 29, 52–53, 77, 102, 120, 127, 258, 301, 328, 330; *See also* reform, healthcare
challenges to launching, 55
contraceptive coverage, 56
essential health benefits, 53
goals of, 52, 53
health insurance coverage after, 53t
impact on healthcare cost, 57–59
increasing access to health care and, 53, 54
minimum essential coverage and expansion to Medicaid, 55–56
overview, 52–53
politics of, 52–53
premium subsidies for purchasing health insurance in Marketplace, 56–57
quality of health care, cost control and, 53–54
supreme court decisions and changes to, 55–57
timeline for implementing, 53–54
aging
common health problems and, 38–39
community long-term services, 41–44
demographic changes regarding, 38
demographic trends and projections, 44–46
future healthcare needs regarding, 46–47
healthcare professionals training and, 47
inpatient psychiatric services, 40–41
intermediate care facilities for people with intellectual disability (ICF/ID), 40
long-term care and, 40–41
Medicaid and, 40
Medicare and, 39–40
nursing facilities (NF), 41
personnel needs concerning, 46–47
profession education about, 46–47
services of institution for mental diseases (IMD), 41
Aging Network, 44
AHDI. *See* Association for Healthcare Documentation Integrity
AHIMA. *See* American Health Information Management Association
AHIP. *See* Academy of Health Information Professionals
aides, personal care, 78, 79
Alliance of Cardiovascular Professionals, 305
allopathic physicians, 103; *See also* MD
almshouses, 14, 41
Alzheimer's Association, 38
Alzheimer's disease, 38–39, 306, 339
AMA. *See* American Medical Association
ambulatory care, 12, 13, 17
as employer, 81–82
ambulatory care nurses, 122–123
American Academy of Audiology, 193
American Academy of Nurse Practitioners, 135
American Academy of Nurse Practitioners Certification Program, 131
American Academy of Oral and Maxillofacial Radiology, 141
American Academy of Orthotists and Prosthetists, 205
American Academy of Pediatric Dentistry, 141
American Academy of Periodontology, 141
American Academy of Physician Assistants, 117
American Academy of Prosthodontists, 141
American Art Therapy Association (AATA), 343
American Association for Laboratory Animal Science (AALAS), 392, 397
American Association for Respiratory Care, 318, 319
American Association of Bioanalysts, 327, 331
American Association of Blood Banks, 331
American Association of Cardiovascular and Cardiopulmonary Rehabilitation (AACVPR), 224, 225
American Association of Colleges of Nursing (AACN), 120, 130, 134
American Association of Colleges of Osteopathic Medicine, 110
American Association of Colleges of Pharmacy, 167
American Association of Colleges of Podiatric Medicine, 111
American Association of Community Colleges (AACC), 120
American Association of Endodontists, 141
American Association of Medical Assistants, 367
American Association of Medical Colleges, 110
American Association of Nurse Anesthetists, 135
American Association of Nurse Practitioners, 130
American Association of Oral and Maxillofacial Surgeons, 141
American Association of Orthodontists, 141
American Association of Professional Coders (AAPC), 355, 356
American Association of Psychiatric Technicians, 380, 381
American Association of Public Health Dentistry, 141
American Association of Veterinary State Boards, 397
American Association of Zoos & Aquariums, 397
American Audiology Board of Intraoperative Monitoring, 190, 193
American Board for Certification in Orthotics, Prosthetics, and Pedorthics (ABC), 204, 205
American Board of Audiology, 190, 193
American Board of Child Language and Language Disorders, 193
American Board of Examiners, 248
American Board of Fluency and Fluency Disorders, 193
American Board of Foot and Ankle Surgery, 111
American Board of Genetic Counseling (ABGC), 254, 255
American Board of Hospice and Palliative Medicine, 105
American Board of Medical Specialties (ABMS), 105, 107, 110
American Board of Opticianry (ABO), 178, 180
American Board of Physical Therapy Specialists, 198, 200
American board of Podiatric Medicine, 109, 111
American board of Podiatric Surgery, 109
American Board of Professional Psychology (ABPP), 231–232, 233
American Board of Surgical Assistants, 310, 311
American Board of Swallowing and Swallowing Disorders, 193
American Cancer Society, 13
American Certification Agency for Healthcare Professional, 331
American Certification for Healthcare Professionals (ACA), 329
American College of Healthcare Administrators (ACHA), 277, 278
American College of Medical Practice Executives (ACMPE), 277, 278
American College of Nurse-Midwives (ACNM), 130, 135
American College of Sports Medicine (ACSM), 218, 225, 2224
American College of Surgeons (ACS), 309
American Counseling Association, 237
American Dance Therapy Association, 341, 343
American Dental Assistants Association, 147

American Dental Association (ADA), 85, 139, 140, 141, 147, 148, 149, 331, 343
American Dental Education Association, 141, 225, 255, 331
American Dental Hygienists Association (ADHA), 144
American Federation for the Blind, 418
American Health Care Association, 371
American Health Information Management Association (AHIMA), 353, 355, 356, 358
American Heart Association, 20
American Hospital Association (AHA), 18, 276
American Humane Association, 395
American Institute of Ultrasound in Medicine, 302
American Job Centers, 418
American Kinesiotherapy Association, 225
American Library Association, 360, 361
American Massage Therapy Association, 335, 343
American Medical Association (AMA), 29, 85, 110
American Medical Technologists (AMT), 327, 329, 331, 367
American Midwifery Certification Board, 131, 135
American Music Therapy Association, 334, 343
American Nurses Association, 134
American Nursing Credentialing Center, 124, 135
American Occupational Therapy Association, 211, 212, 215
American Optometric Association (AOA), 175, 176, 177, 368
American Orthotic and Prosthetic Association, 205
American Osteopathic Association (AOA), 105, 106, 107, 110
American Pharmacists Association, 167
American Physical Therapy Association (APTA), 198, 200, 201, 202
American Podiatric Medical Association, 111
American Podiatric Medical Licensing Exam (APMLE), 109
American Psychological Association (APA), 231, 233
American Public Health Association, 270, 276
American Registry for Diagnostic Medical Sonographers (ARDMS), 300, 302, 304, 305
American Registry of Radiologic Technologists (ARRT), 290, 291, 294, 295, 302, 307, 308
American School Health Association, 270
American Society for Clinical Laboratory Science, 331
American Society for Clinical Pathology (ASCP), 327, 330, 331
American Society for Cytopathology, 331
American Society for Parenteral and Enteral Nutrition (ASPEN), 157
American Society of Exercise Physiologists (ASEP), 223, 225
American Society of Health-System Pharmacists, 167, 170
American Society of Podiatric Medical Assistants, 368
American Society of Radiologic Technologists, 291, 295
American Society of Registered Nurses, 135
American Speech-Language-Hearing Association (ASHA), 187, 193
American Therapeutic Recreation Association, 337, 343
American Veterinary Medical Association, 387
anatomy, 90
anesthesiologists, 103, 108
  work environment, 105
animal and human health, 386
Animal and Plant Health Inspection Service (APHIS), 387
animal care and service workers
  additional information, 396–397
  advancement, 395
  certification and other requirements, 395
  earnings, 396, *396*
  education, 394–395
  employment change, 395–396
  employment opportunities, 391
  employment trends, 395
  job prospects, 396, *396*
  licensure, 395
  related occupations, 396
  training, 394–395
  work description, 393–394
  work environment, 394
animals, working with, 386; *See also* specific occupations
animal trainers, 393
anorexia nervosa, 233
antibiotics, 5
anti-bleeding gel, 66
antiviral therapy, 5
AOA. *See* American Optometric Association; American Osteopathic Association; U.S. Administration on Aging
APA. *See* American Psychological Association
APHIS. *See* Animal and Plant Health Inspection Service
APMLE. *See* American Podiatric Medical Licensing Exam
applied behavior analysis (ABA), 8
apprenticeship programs, 178
Approval Committee for Certificate Programs (ACCP), 358
apps, 65
APRNs. *See* advanced practice registered nurses
APTA. *See* American Physical Therapy Association
ARCB. *See* Art Therapy Credentials Board
ARDMS. *See* American Registry for Diagnostic Medical Sonographers
Area Agencies on Aging (AAAs), 44, 45
ARRT. *See* American Registry of Radiologic Technologists
arterial blood sample, 315
Art Therapist Registered-Board Certified (ATR-BC), 341
art therapists (ATs), 340–341
art therapy, 334, 340
Art Therapy Credentials Board (ATCR), 341, 344
ASCP. *See* American Society for Clinical Pathology
ASD. *See* autism spectrum disorder
ASEP. *See* American Society of Exercise Physiologists
ASHA. *See* American Speech-Language-Hearing Association
ASPEN. *See* American Society for Parenteral and Enteral Nutrition
assessments, 348
assistant administrators, 274
assisted-living facilities, 42, 81
assistive devices, 196
associate administrator, 277
Associated Bodywork & Massage Professionals, 343
associate's degree in nursing (ADN), 124
Association for Education and Rehabilitation of the Blind and Visually Impaired (AER), 265, 270
Association for Healthcare Documentation Integrity (AHDI), 358, 359
Association of Academic Health Sciences Libraries (AAHSL), 361
Association of American Medical Colleges (AAMC), 85, 110
Association of American Veterinary Medical Colleges, 396
Association of Environmental Health Academic Programs, 411
Association of Mental Health Administrators, 276
Association of Nutrition & Foodservice Professionals, 161
Association of Professional Behavior Analysts (APBA), 270

Association of Schools and Colleges of Optometry, 177
Association of Schools and Programs of Public Health, 270
Association of Social Work Boards (ASWB), 243, 249
Association of State and Provincial Psychology Boards, 233
Association of Surgical Technologists, 311
Association of University Programs in Health Adminstration, 278
ASWB. *See* Association of Social Work Boards
athletic trainers, 218
  additional information, 225
  advancement, 220
  certification, 220
  earnings, 222
  education, 219–220
  employment change, *220,* 220–222
  employment opportunities, 219
  employment trends, 220
  job prospects, 222, *222*
  licensure, 220
  professional profiles, 221
  related occupations, 222
  training, 220
  work description, 218–219
  work environment, 219
Athletic Trainers Strategic Alliance, 210, 220
ATR. *See* Registered Art Therapist
ATR-BC. *See* Art Therapist Registered-Board Certified
ATs. *See* art therapists
audiologists, 76, 184, 185
  additional information, 193
  advancement, 191
  certification and other requirements, 190
  earnings, 191, *191*
  education, 190
  employment change, 191
  employment opportunities, 189–190, *190*
  employment trends, 191
  job prospects, 191, *191*
  licensure, 190
  professional profiles, 192
  related occupations, 191
  training, 190
  work description, 188–189
  work environment, 189
Audiology Foundation of America, 193
autism spectrum disorder (ASD), 8, 258, 269
automated analyzers, 326
automated external defibrillator (AED), 90, 218
avian (bird) influenza, 6, 18

B

BACB. *See* Behavior Analysis Certification Board
bachelor of science in nursing (BSN), 120, 124
bachelor's degree in social work (BSW), 242–243
bar coding technology, 70
BCaBA®. *See* Board Certified Assistant Behavior Analyst®
BCBA®. *See* Board Certified Behavior Analyst®
BC-DMT. *See* Board-Certified Dance/movement Therapist
BCETMB. *See* Board Certification Exam for Therapeutic Massage and Bodywork
BCNS. *See* Board for Certification of Nutrition Specialists
BCS-IOM. *See* Board Certified Specialist in Inoperative Monitoring
BCSP. *See* Board of Certified Safety Professionals
beam modification devices, 294
Behavioral Risk Factor Surveillance System (BRFSS), 20
Behavior Analysis Certification Board (BACB), 269, 270
behavior analysts, 258
  additional information, 270
  certification and other requirements, 269–270
  earnings, 270
  education, 269–270
  employment opportunities, 269
  licensure, 269
  overview, 269
  training, 269
  work description, 269
  work environment, 269
billing process, 69
binge-eating disorder, 233, 235
biological technicians, 408
biomedical engineers, 65
birth certificate, 70
blind workers; *See also* orientation and mobility specialists; visual rehabilitation therapists
  career information sources for, 418
blood banks, 82
blood bank technologists, 325
blood pH, 315
Blue Cross and Blue Shield, 29
Board Certification Exam for Therapeutic Massage and Bodywork (BCETMB), 336
Board Certified Assistant Behavior Analyst® (BCaBA®), 269, 270
Board Certified Behavior Analyst® (BCBA®), 269–270
Board-Certified Dance/movement Therapist (BC-DMT), 342
Board Certified Diplomate in Clinical Social Work (BCD), 243
Board Certified Specialist (BCS), 187
Board Certified Specialist in Audiology®, 190
Board Certified Specialist in Inoperative Monitoring (BCS-IOM), 190
Board for Certification of Nutrition Specialists (BCNS), 156, 161
Board of Certification/Accreditation (BOC), 204, 205, 220, 225, 327
Board of Certified Safety Professionals (BCSP), 401, 410
Board of Pharmacy Specialists, 167
Board of Registry of the American Association of Bioanalysts, 327, 331
Board of Registry of the American Society for Clinical Pathology (ASCP), 327, 330
BOC. *See* Board of Certification/Accreditation
bone injuries, 218
brain diseases, genetic identification, 8
breast sonographers, 300
breathing, maintaining, 314
BRFSS. *See* Behavioral Risk Factor Surveillance System
BSW. *See* bachelor's degree in social work
budgets, 274
bulimia nervosa, 233
Bundled payments, 27
Bureau of Health Professions, 85
Bureau of Labor Statistics, 76, 106, 418
business dietitian nutritionists, 153

C

CAA. *See* Council on Academic Accreditation
CAAHEP. *See* Commission on Accreditation of Allied Health Education Programs
CAATE. *See* Commission on Accreditation of Athletic Training Education
CAHIIM. *See* Commission on Accreditation for Health Informatics and Information Management Education
CAHME. *See* Commission on Accreditation of Healthcare Management Executives
CALA. *See* Certified Assisted Living Administrator
Canadian Council for Accreditation of Pharmacy Programs (CCAPP), 166
cancer, 5
  lifestyle factors and, 6–7
cancer registrars, 354

capitation, 26, 30
CAPTE. *See* Commission on Accreditation of Physical Therapy Education
cardiac rehabilitation program, 223
cardiac sonographers, 303
cardiopulmonary disorders, 314
cardiopulmonary resuscitation (CPR), 90, 201
cardiopulmonary resuscitation certification (CPR), 218, 317, 336
Cardiovascular Credentialing International (CCI), 304, 305
cardiovascular nurse, *122*
cardiovascular surgery, 104
cardiovascular technologists and technicians
  additional information, 305
  advancement, 304
  certification and other qualifications, 304
  echocardiography and, 303
  education, 304
  electrocardiography and, 303
  employment change, 304–305
  employment opportunities, 304
  employment trends, 304
  invasive cardiology and, 302
  job prospects, 305, *305*
  licensure, 304
  noninvasive technology and, 302–303
  related occupations, 305
  training, 304
  vascular technology and, 303
  work descriptions, 302–303
  work environment, 303–304
career counselors, 417
career development, 90–97
  common core of knowledge, 90–92
  communication skills, 92
  confidentiality and, 94
  continuing education requirements, 97
  ethics and, 93–94
  healthcare teams, 95
  lawsuits, 95–96
  legal issues, 95–96
  overview, 90
  professionalism and, 92–95
  professional profiles, 91
  right to practice, 95
  technical skills, 90
  writing skills, 92
career information sources
  blind workers, 418
  company websites, 417
  counselors, 417
  employers, 416
  federal government related jobs, 419
  informational interviews, 416
  Internet resources, 417
  job boards, 417–418
  labor unions, 416
  local libraries, 417
  military, 419
  older workers, 418–419
  online, from U.S. Department of Labor, 418
  postsecondary institutions, 417
  professional societies, 416
  social networking, 418
  for specific groups, 418–419
  trade groups, 416
  U.S. Office of Personnel Management, 419
  veterans, 419
  women, 419
  workers with disabilities, 418
CareerOneStop, 418
Career Outlook, 418
career planning; *See also* résumé
  additional information, 85–86
  additional work settings and, 82
  categories of occupations and, 76
  certification and, 84
  employers and, 78–82
  employment opportunities and, 82–84
  expanded functions and, 82
  exploration and, 83
  false assumptions and, 84–85
  government and, 82
  home health care services and, 81
  hospitals and, 79–80
  industry and, 82
  licensure and, 84
  loans for, 83
  minorities and, 83
  nursing care facilities and, 81
  offices of health practitioners and, 80–81
  outpatient, laboratory, and other ambulatory care services and, 81–82
  overview, 76
  personal aides, 78, 79
  primary care and, 82
  projected demand and, 77–78
  registration and, 84
  residential care facilities and, 81
  rural and inner city and, 82–83
  scholarships and, 83
  school selection and, 83–84
  shortages, 77
  using this book, 85
  videos, 85
  wide-ranging of opportunities and, 84–85
careers, trends and, 8
caregiver, 39
carrier testing, 253
CCA. *See* Certified Coding Associate
CCAPP. *See* Canadian Council for Accreditation of Pharmacy Programs
CCC-A. *See* Certificate of Clinical Competence in Audiology
CCC-SLP. *See* Certificate of Clinical Competence in Speech-Language Pathology
CCI. *See* Cardiovascular Credentialing International
CCMA. *See* Certified Clinical Medical Assistant
CCS. *See* Certified Coding Specialist
CCT. *See* Certified Cardiographic Technician
CDAs. *See* certified dental assistants
CDC. *See* Centers for Disease Control and Prevention
CDIP. *See* Certified Document Improvement Practitioner
CDR. *See* Commission on Dietetic registration
CDSS. *See* clinical decision support system
cell counters, 324
Center for Clinical Social Work, 248
Center for Credentialing & Education, 249
Center for Medicare and Medicaid Innovation, 52
Center for Phlebotomy Education, 331
Center for Veterinary Medicine (CVM), 387–388
Centers for Disease Control and Prevention (CDC), 6, 20, 82, 387, 406
Centers for Medicare and Medicaid Services (CMS), 26–27, 32, 39, 52, 54
CEO. *See* chief executive officer
Certificate of Clinical Competence in Audiology (CCC-A), 190, 193
Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP), 187
certification; *See also* specific certifying organization
  animal care and service workers, 395
  APRNs, 130–131
  athletic trainers, 220
  audiologists, 190
  cardiovascular technologists and technicians, 304
  CHWs, 263–264
  clinical laboratory scientists and technicians, 327
  dental assistants, 146
  dental laboratory technicians, 148–149
  diagnostic medical sonographers, 300–301
  dietitians, 156–157

dispensing opticians, 178
DO and MD, 106–107
environmental science and protection technicians, 410
environmental scientists and specialists, 407
exercise physiologists, 223–224
genetic counselors, 254
health educators, 260
health information administrators, 353
health information technician, 355
health services managers, 277
home health aides, 375–376
massage therapists, 336
medical assistants, 366
medical librarians, 361
medical transcriptionists, 358
nuclear medicine technologists, 307
nursing assistants and orderlies, 369
occupational health and safety specialists, 401
occupational health and safety technicians, 404
occupational therapists, 211
occupational therapy assistants and aides, 214
O&M specialists, 266
ophthalmic laboratory technicians, 181
orthotics and prosthetics (O&P), 204
PA, 116
personal care aides, 378
pharmacy technicians and aides, 169
phlebotomists, 330
physical therapists, 198
podiatrists, 109–110
professional, 84
psychiatric technicians and aides, 380
psychologists, 231–232
radiation therapists, 294
respiratory therapists, 317
right to practice and, 95
RNs, 124
RTs, 339
school health educators, 262
social and human service assistants, 247
social workers, 243
speech-language pathologists, 187
substance abuse and behavioral disorder counselors, 235–236
surgical technologists, 309–310
veterinarians, 389
veterinary technologists and technicians, 392
VRTs, 267
Certification Board for Diabetes Educators, 166
Certification Board for Music Therapists, 344
Certified Assisted Living Administrator (CALA), 277
certified athletic trainer, 218
certified cardiac rehabilitation professional (CCRP), 224
Certified Cardiographic Technician (CCT), 304
certified clinical exercise specialist (CES), 224
Certified Clinical Medical Assistant (CCMA), 366
Certified Coding Associate (CCA), 355
Certified Coding Specialist (CCS), 355
certified dental assistants (CDAs), 147
certified diabetes educator® (CDE®), 157
Certified Document Improvement Practitioner (CDIP), 353
Certified First Surgical Assistant (CFSA), 310
Certified Fitter-mastectomy (CFm) credential, 204
Certified Fitter-orthotics (CFo) credential, 204
Certified Fitter-therapeutic shoes (CFts) credential, 204
Certified Healthcare Documentation Specialist (CHDS), 358
Certified Healthcare Technology Specialist (CHTS), 353
Certified Health Data Analyst credential (CHDA), 353
Certified Health Education Specialist (CHES), 260
Certified in Healthcare Privacy and Security (CHPS), 353
Certified Medical Assistant (CMA), 366
Certified Medical Coding Specialist (CMCS), 355
Certified Medical Manager (CMM), 277
Certified Medical Practice Executive, 277
Certified Medication Assistant (CMA), 369
certified midwives (CMs), 128, 131
Certified Movement Analyst (CMA), 342
certified nurse assistants (CNAs), 369
certified Nurse-Midwives (CNMs), 128–129, 131
Certified Nursing Home Administrator (CNHA), 277
certified nutrition specialist® (CNS®), 157, 161
certified nutrition specialist-scholar℠ (CNS-S℠), 157
certified nutrition support clinician® (CNSC®), 157
Certified Occupational Therapy Assistant (COTA), 214
Certified Orientation and Mobility Specialist (COMS®), 266
Certified Orthotic Technician (CTO), 204
Certified Orthotist (CO) credential, 204
Certified Pedorthist (CPed) credential, 204
certified personal trainer (CPT), 218
Certified Prosthetic-Orthotic Technician (CTPO), 204
Certified Prosthetic Technician (CTP), 204
Certified Prosthetist Orthotist (CPO) credential, 204
certified registered nurse anesthetists (CRNAs), 128, 131
Certified Respiratory Therapist (CRT), 317; *See also* respiratory therapists
Certified Safety Professional (CSP), 401
Certified Surgical Assistant (CSA), 310
Certified Surgical Technologist (CST), 309
Certified Therapeutic Recreation Specialist (CTRS), 339
Certified Tumor Registrar (CTR), 355
Certified Vision Rehabilitation Therapist (CVRT), 267
CES. *See* certified clinical exercise specialist
CHAMPVA. *See* Civilian Health and Medical Program of the Department of Veterans Affairs
CHDA. *See* Certified Health Data Analyst credential
CHDS. *See* Certified Healthcare Documentation Specialist
chemical technicians, 408
CHES. *See* Certified Health Education Specialist
chest physiotherapy, 315
chief executive officer (CEO), 275
child and family social workers, 240, 241
Child Language and Language Disorders (BCS-CL), 187
child or adult protective services social workers, 241
Children's Health Insurance Program (CHIP), 4, 13, 26, 28
healthcare reform and, 52, 55, 59
child welfare social workers, 241
CHIP. *See* Children's Health Insurance Program
chiropractors, 76, 140
CHPS. *See* Certified in Healthcare Privacy and Security
chromosomes, 253
chronic illness, 5, 38
predominance of, 7
chronological format, résumé, 420
CHST. *See* Construction Health and Safety Technician Certification
CHTS. *See* Certified Healthcare Technology Specialist
CHWs. *See* community health workers
cinical social workers, 241

Civilian Health and Medical Program of the Department of Veterans Affairs (CHAMPVA), 12, 16
CLIA. *See* Clinical Laboratory Improvement Act
climate change analysts, 406
clinical chemistry specialists, 325
clinical decision support system (CDSS), 67
clinical dietitian nutritionists, 152
clinical documentation improvement specialists (CDI), 350
Clinical Laboratory Improvement Act (CLIA), 326–327
Clinical Laboratory Management Association, 331
clinical laboratory scientists and technicians advancement, 327
certification and other qualifications, 327
earnings, 328, *328*
education, 326–327
employment change, 327–328, *328*
employment opportunities, 326
employment trends, 327
job prospects, 328
licensure, 327
related occupations, 328
training, 326–327
work description, 324–326
work environment, 326
clinical medical assistants, 364
clinical nurse specialists (CNSs), 129, 130, 131
clinical preventive services, 7, 53
clinical psychologists, 229
clinical reasoning, 198
Clinton, Bill, 18
closely held corporations, 56
cloud computing, 70
CMA. *See* Certified Medical Assistant; Certified Movement Analyst
CMCS. *See* Certified Medical Coding Specialist
CMM. *See* Certified Medical Manager
CMS. *See* Centers for Medicare and Medicaid Services
CMs. *See* certified midwives
CNAs. *See* certified nurse assistants
CNHA. *See* Certified Nursing Home Administrator
CNMs. *See* certified Nurse-Midwives
CNSs. *See* clinical nurse specialists
CoAES. *See* Committee on Accreditation for the Exercise Sciences
Co-ARC. *See* Committee on Accreditation for Respiratory Care
Cochlear Implant Specialty Certification® (CISC®), 190
CODA. *See* Commission on Dental Accreditation
code of ethics, 93–94
coders, 354
coding systems, 69
cognitive skills, 208
colleges, health educators in, 259
combination format, résumé, 420
COMLEX-USA. *See* Comprehensive Osteopathic Medical Licensing Examination
Commissioned Corps, 20
Commissioned Officer Student Extern Training Program (COSTEP), 407
Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), 353, 355
Commission on Accreditation of Allied Health Education Programs (CAAHEP), 85, 223, 225, 300, 302, 304, 305, 309, 311, 316, 317, 318, 327, 331, 343, 367
Commission on Accreditation of Athletic Training Education (CAATE), 210, 220, 225
Commission on Accreditation of Health Care Management Educators, 278
Commission on Accreditation of Healthcare Management Executives (CAHME), 276
Commission on Accreditation of Physical Therapy Education (CAPTE), 198, 200, 201, 202
Commission on Dental Accreditation (CODA), 139, 141, 143, 144, 145, 147, 148, 149
Commission on Dietetic registration (CDR), 156, 157, 161
Commission on Opticianry Accreditation, 178, 180, 181
Committee on Accreditation for Respiratory Care (Co-ARC), 316, 317, 318
Committee on Accreditation for the Exercise Sciences (CoAES), 223
common core of knowledge, career development and, 90–92
communication, career development and, 92
communication disorders, 186
communication skills, 220
community and social service occupations, 76
community-based agencies, 13–14
community-based RTs, 338
community dietitian nutritionists c, 153
community health workers (CHWs), 258
additional information, 270
advancement, 264
certification and other qualifications, 263–264
earnings, 264, *264*
education, 263–264
employment change, 264
employment opportunities, 263
employment trends, 264
job prospects, 264, *264*
licensure, 263
related occupations, 264
training, 263
work description, 262–263
work environment, 263
community hospitals, 15
community long-term services, 41–44
adult day care services, 43
Aging Network, 44
HHAs, 43
hospice, 43
Meals on Wheels, 45
PACE, 44
residential care communities/ assisted-living facilities, 42
community mental health centers, 82
companion animal veterinarians, 387
company websites, as career information source, 417
complementary and alternative medicine, 334
compliance, 400
compounding, 164
Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA), 106
computed tomography (CT), 288, 291
computer-aided adaptive equipment, 208
computerized physician order entry (CPOE) system, 69
Conestoga Wood Specialties, 56
confidentiality, 71, 94
ethics and, 94
medical transcriptionists and, 357
conflict of interest, 94
conflict resolution, 240
Congressional Budget Office (CBO), 58
Consensus Model for APRN Regulation, 130
Construction Health and Safety Technician Certification (CHST), 404
consultant dietitian nutritionists, 152–153
consultant pharmacists, 165
consultants, 152
Consumer-Patient Radiation Health and Safety Board, 143
consumer's rights, 18
contact lenses, 174
continuing care community, 42
continuing education, 97
contraceptive coverage, ACA, 56
Cook County Hospital, Chicago, 16

coordinate, 274
Coordinated Program in Dietetics (CPD), 156
copayments, 31
corrective lenses, 178
COSTEP. *See* Commissioned Officer Student Extern Training Program
costs
  ACA impact on, 57–59
  GDP, 52
  healthcare, 4, 8
  health insurance, 31–32
  indicators, 58
  premium, health insurance, 57
  programs to control, 58–59
  quality of care and control of, 53–54
  technology and, 4, 7, 31
cost sharing reduction, 56
COTA. *See* Certified Occupational Therapy Assistant
Council for Standards in Human Services Education (CSHSE), 247, 249
Council on Academic Accreditation (CAA), 187, 190
Council on Accreditation of Nurse Anesthesia Educaional Programs (COA), 134
Council on Education for Public Health, 260, 270
Council on Education of the American Veterinary Medical Association (AVMA), 388, 392, 396
Council on Podiatric Medical Education (CPME), 109, 111
Council on Social Work Education, 243, 248
counseling psychologists, 229
counselors, career, 417
CPD. *See* Coordinated Program in Dietetics
CPME. *See* Council on Podiatric Medical education
CPOE. *See* computerized physician order entry system
CPR. *See* cardiopulmonary resuscitation
CPT. *See* certified personal trainer; Current Procedural Terminology
critical care nurse, *122*
CRNAs. *See* certified registered nurse anesthetists
CRT. *See* Certified Respiratory Therapist
CSHSE. *See* Council for Standards in Human Services Education
CSP. *See* Certified Safety Professional
CST. *See* Certified Surgical Technologist
CT. *See* computed tomography
CTR. *See* Certified Tumor Registrar
CTRS. *See* Certified Therapeutic Recreation Specialist
CT technologists, 288
Current Procedural Terminology (CPT), 69, 354
CVM. *See* Center for Veterinary Medicine
CVRT. *See* Certified Vision Rehabilitation Therapist
cytotechnologists, 325

D

DA. *See* dietetic assistants
DANB. *See* Dental Assisting National Board
dance movement therapy (DMT), 341, 342
dance therapists (DTs), 341–342
dance therapy, 334, 341–342
Data Service Hub, 55
death rates, 5
deductible, 31
deep tissue massage, 196
dementia, 38, 39
demographics
  aging and, 38
  trends and projections, 44–46
  vision care and, 181
Dental Admissions Test (DAT), 139
dental assistants, 76
  additional information, 147
  advancement, 146
  certification and other qualifications, 146
  earnings, 147
  education, 145–146
  employment change, 146
  employment opportunities, 145–146
  employment trends, 146
  geriatrics and, 47
  job prospects, 146–147, *147*
  licensure, 146
  related occupations, 147
  training, 145–146
  work description, 144–145
  work environment, 145
Dental Assisting National Board (DANB), 146, 147
dental ceramists, 148
dental hygienists, 81
  additional information, 144
  advancement, 143
  earnings, 144
  education, 143
  employment change, 143–144
  employment opportunities, 143–144
  employment trends, 143
  geriatrics and, 47
  job prospects, 144, *144*
  licensure, 143
  other qualifications, 143
  professional profiles, 142
  training, 143
  work description, 141–143
  work environment, 143
dental laboratories, 82
dental laboratory technicians
  additional information, 149
  advancement, 149
  certification and other qualifications, 148–149
  earnings, 149
  education, 148–149
  employment change, 149
  employment opportunities, 148
  employment trends, 149
  job prospects, 149
  related occupations, 149
  training, 148
  work description, 147–148
  work environment, 148
dental public health specialists, 138
dentists, 76
  additional information, 141
  advancement, 139
  earnings, 140
  education, 139
  employment change, 139–140
  employment opportunities, 138–140
  equipments used by, 138
  geriatrics and, 47
  job prospects, 140, *140*
  licensure, 139
  other qualifications, 139
  related occupations, 140
  training, 139
  work description, 138
  work environment, 138
developmental psychologists, 229
DI. *See* dietetic internship
diagnosis, 12, 13
diagnosis and treatment plan, 348
diagnosis-related groups (DRGs), 30, 58, 354
diagnostic medical sonographers
  additional information, 302
  advancement, 301
  certification and other qualifications, 300–301
  earnings, 301
  education, 300–301
  employment change, 301
  employment opportunities, 300
  employment trends, 301
  job prospects, 301, *301*
  related occupations, 301
  training, 300
  work description, 298–300
  work environment, 300
diagnostic medical sonography, 300
diarrhea, 4
Didactic Program in Dietetics (DPD), 156
Dietary Managers association, 160
dietetic assistants (DA), 160–161
dietetic educator, 154

dietetic internship (DI), 156
dietetic technician, registered (DTR), 158
dietetic technicians
  additional information, 160–161
  certification and other qualifications, 159
  earnings, 159, *160*
  education, 159
  employment opportunities, 158–159, *159*
  employment trends, 159–160
  licensure, 159
  related occupations, 160
  training, 159
  work description, 158
  work environment, 158
dietitians, 76
  ACEND recommendations, 156
  additional information, 160–161
  advancement, 157
  certification and other qualifications, 156–157
  clinical, 152
  community, 153
  consultant, 152–153
  earnings, 158, *158*
  education, 154–157
  employment change, 157
  employment opportunities, 154, *154*
  employment trends, 157
  job prospects, 157
  licensure, 156
  professional profiles, 155
  RDNs, 152, 153
  related occupations, 158
  training, 154–156
  WIC, 153
  work description, 152–154
  work environment, 154
diphtheria, 4
direct care workers, 368
direct support professionals, 377
Disability.gov, 418
disability-related resources, 418
disable workers, career sources for, 418
disease prevention services, 12
disparagement, 94
dispensing opticians, 174
  additional information, 179–180
  advancement, 178
  certification, 178
  earnings, 179, *179*
  education, 178
  employment change, 178–179
  employment opportunities, 178
  employment trends, 178
  job prospects, 179, *179*
  licensure, 178
  related occupations, 179
  training, 178
  work description, 177
  work environment, 178
distributive health care, 30
DMT. *See* dance movement therapy
DNA testing, 8
DO (doctor of osteopathy), 103
  additional information, 110–111
  advancement, 107
  certification and other qualifications, 106–107
  earnings, 107, 108
  education, 106–107
  employment change, 107
  employment trends, 107
  job prospects, 107
  licensure, 106
  training, 106
doctor. *See* DO; MD
Doctorate in Clinical Social Work (DSW), 243
doctorate in nursing practice (DNP), 120, 130
Doctor of Audiology (AuD), 190
Doctor of Dental Medicine (DMD), 139
Doctor of Dental Surgery (DDS), 139
Doctor of Osteopathic Medicine. *See* DO
Doctor of Pharmacy (PharmD) degree, 165
Doctor of Podiatric Medicine (DPM) degree, 109
Doctor of Psychology (PsyD), 230–231
Doctor of Veterinary Medicine (DVM), 388, 389
doctors of optometry (ODs), 174, 175; *See also* optometrists
documentation, 92, 348
DoD. *See* U.S. Department of Defense
dog trainers, 395
Doppler ultrasound, 302
dosimetrists, 293
DPD. *See* Didactic Program in Dietetics
DRGs. *See* diagnosis-related groups
DRG validator, 354
DSW. *See* Doctorate in Clinical Social Work
DTR. *See* dietetic technician, registered
DTs. *See* dance therapists
DVM. *See* Doctor of Veterinary Medicine

E

EAPs. *See* employee assistance programs
earnings
  animal care and service workers, 396, *396*
  APRNs, 132, *132*
  athletic trainers, 222
  audiologists, 191, *191*
  CHWs, 264, *264*
  clinical laboratory scientists and technicians, 328, *328*
  dental assistants, 147
  dental hygienists, 144
  dental laboratory technicians, 149
  dentists, 140
  diagnostic medical sonographers, 301
  dietitians, 158, *158*
  dispensing opticians, 179, *179*
  EMT-paramedics, 285
  environmental science and protection technicians, 410, *410*
  environmental scientists and specialists, 408, *408*
  exercise physiologists, 224
  genetic counselors, 255, *255*
  health educators, 261, *261*
  health information administrators, 353
  health information technician, 356
  health services managers, 278, *278*
  home health aides, 376, *376*
  LPN/LVN, 134, *134*
  massage therapists, 337
  MD and DO, 107, 108
  medical assistants, 367, *367*
  medical librarians, 361
  medical transcriptionists, 359, *359*
  nuclear medicine technologists, 308
  nursing assistants and orderlies, 370, *371*
  occupational health and safety specialists, 402, *402*
  occupational health and safety technicians, 405, *405*
  occupational therapists, 212, *212*
  occupational therapy assistants and aides, 215, *215*
  O&M specialists, 266
  ophthalmic laboratory technicians, 181
  optometrists, 176, *177*
  orthotics and prosthetics (O&P), 205, *205*
  PA, 117, *117*
  personal care aides, 378–379, *379*
  pharmacists, 167
  pharmacy technicians and aides, 170
  phlebotomists, 330
  physical therapist assistants and aides, 202, *202*
  physical therapists, 199, *199*
  podiatrists, 110
  psychiatric technicians and aides, 381, *381*
  psychologists, 233, *233*
  radiation therapists, 295
  respiratory therapists, 317
  respiratory therapy technicians, 318
  RNs, 127, *127*
  RTs, 340, *340*
  social and human service assistants, 248, *248*

social workers, 244–245, *245*
speech-language pathologists, 188, *188*
substance abuse and behavioral disorder counselors, 236, *236*
surgical technologists, 310, *310*
veterinarians, 390
veterinary technologists and technicians, 393
VRTs, 267
eating disorders, 233, 235
Ebola, 6, 18
ECGs. *See* electrocardiograms
echocardiographers, 303
echocardiography, 303
economic effectiveness, 230
education; *See also* specific educational organization
animal care and service workers, 394–395
APRNs, 130–131
athletic trainers, 219–220
audiologists, 190
cardiovascular technologists and technicians, 304
CHWs, 263–264
clinical laboratory scientists and technicians, 326–327
continuing, career development and, 97
dental assistants, 145–146
dental hygienists, 143
dental laboratory technicians, 148–149
dentists, 139
diagnostic medical sonographers, 300–301
dietitians, 154–157
dispensing opticians, 178
EMT-paramedics, 284–285
environmental science and protection technicians, 409–410
environmental scientists and specialists, 406–407
exercise physiologists, 223–224
genetic counselors, 254
geriatrics, 46–47
health careers specializing in, 258–270 (*See also* community health workers; health educators; school health educators)
health educators, 260
health information administrators, 353
health information technician, 355
health services managers, 276–277
home health aides, 375–376
LPN/LVN, 133
massage therapists, 336
MD and DO, 106–107
medical assistants, 366
medical librarians, 360–361
medical transcriptionists, 358
nuclear medicine technologists, 307
nursing assistants and orderlies, 369–370
occupational health and safety specialists, 401
occupational health and safety technicians, 403–404
occupational therapists, 211
occupational therapy assistants and aides, 213–214
O&M specialists, 265–266
ophthalmic laboratory technicians, 180–181
optometrists, 175–176
orthotics and prosthetics (O&P), 204
PA, 115–116
personal care aides, 377–378
pharmacists, 165–166
pharmacy technicians and aides, 168–169
phlebotomists, 329
physical therapist assistants and aides, 201
physical therapists, 198–199
podiatrists, 109–110
projections for, 77–78
psychiatric technicians and aides, 380
psychologists, 230–232
radiation therapists, 294
respiratory therapists, 316–317
respiratory therapy technicians, 318
RNs, 123–124
RTs, 338–339
school health educators, 262
social and human service assistants, 246–247
social workers, 242–243
speech-language pathologists, 186–187
substance abuse and behavioral disorder counselors, 235–236
surgical technologists, 309–310
veterinarians, 388–389
veterinary technologists and technicians, 391–392
VRTs, 267
educational psychologists, 229
Educational Testing Service, 187
educators, health. *See* health educators
EEOC. *See* U.S. Equal Employment Opportunity Commission
EHRs. *See* electronic health records
electrical stimulation, 196
electrocardiograms (ECGs), 283, 302, 303
electrocardiograph technicians, 303
electronic health records (EHRs), 8, 67, 69, 196, 203, 209, 354, 357, 366
benefit, 69
implementation, 69
increasing use of, 349
electronic health record support specialist, 354
Electronic materials management, 70
Electronic Residency Application Service (ERAS), 110
emergency equipment, 284
emergency medical responder, 283
emergency medical services, 284
emergency medical technician (EMT), 77, 82, 222; *See also* EMT-paramedics
high drama and, 282
volunteer EMTs, 284
emergency medicine, PAs and, 114
emergency skills, 283
emotional disorders, 209
emotional stress, 240
employee assistance programs (EAPs), 235
employers, 275
additional work settings, 82
as career information source, 416
career planning and, 78–82
government, 82
home health care services, 81
hospitals, 79–80
industry, 82
nursing care facilities, 81
offices of health practitioners, 80–81
outpatient, laboratory, and other ambulatory care services, 81–82
overview of, 78–79
residential care facilities, 81
employer shared responsibility payment, 56
employer-sponsored health insurance, 31, 56
Employment and Training Administration, 418
employment change. *See* specific career
employment opportunities
animal care and service workers, 391
APRNs, 129–130, *130*
athletic trainers, 219
audiologists, 189–190, *190*
cardiovascular technologists and technicians, 304–305
career planning and, 82–84
categories of occupations, 76
certification and, 84
CHWs, 263
clinical laboratory scientists and technicians, 326
dental assistants, 145–146
dental hygienists, 143–144
dental laboratory technicians, 148
dentists, 138–140
diagnostic medical sonographers, 300
dietitians, 154, *154*
dispensing opticians, 178
EMT-paramedics, 284

environmental science and protection technicians, 409
environmental scientists and specialists, 406
exercise physiologists, 223
expanded functions and, 82
exploration and, 83
false assumptions about, 84–85
genetic counselors, 254
growth in, 33, 77–78, 79
health educators, 260, *260*
health information administrators, 353
health information technician, 355
health services managers, 276
HHS, 20
home health aides, 375, 376
licensure and, 84
loans and, 83
LPN/LVN, 120, *121,* 133
massage therapists, *335,* 335–336
MD, 106, *106*
medical assistants, 366
medical librarians, 360
medical transcriptionists, 357–358
for minorities, 83
nuclear medicine technologists, 307
nursing assistants and orderlies, 369, 370
occupational health and safety specialists, 401
occupational health and safety technicians, 403, *403*
occupational therapists, 209–211
occupational therapy assistants and aides, 213
O&M specialists, 265
ophthalmic laboratory technicians, 180
optometrists, 175
orthotics and prosthetics (O&P), 204
PA, 114
personal care aides, 377, *378*
pharmacists, 165, 166–167
pharmacy technicians and aides, 168–169
phlebotomists, 329
physical therapist assistants and aides, 201
physical therapists, 198
podiatrists, 109
primary care, 82
projected demand in, 77–78
psychiatric technicians and aides, 380–381
psychologists, 230
public health services, 20
radiation therapists, 294
registration and, 84
respiratory therapists, 316
respiratory therapy technicians, 318
RNs, 120, *121,* 123
RTs, 338, *338*
rural and inner city, 82–83
scholarships and, 83
school health educators, 262
school selection and, 83–84
social and human service assistants, *247,* 247–248
social workers, 242, *242*
something for everyone, 84–85
speech-language pathologists, 186, *186*
substance abuse and behavioral disorder counselors, 235
surgeons, 106, *106*
surgical technologists, 309
veterinarians, 388
veterinary technologists and technicians, 391
VRTs, 267
wide-ranging of, 84–85
EMT. *See* emergency medical technician
EMT-paramedics
additional information, 285
advancement, 285
earnings, 285
education, 284–285
employment change, 285
employment opportunities, 284
employment trends, 285
job prospects, 285, *285*
licensure, 284
other qualifications, 284–285
related occupations, 285
training, 284–285
work description, 282–283
work environment, 284
Encyclopedia of Associations, 416
endodontists, 138
endotracheal intubations, 283
engineering psychologists, 229
environment, protection of, 400
environmental chemists, 406
environmental factors, 240
environmental health specialists, 406
Environmental Health Technician (CEHT), 410
Environmental Protection Agency, 406
environmental restoration planners, 406
environmental science and protection technicians
additional information, 410–411
advancement, 410
certification and other qualifications, 410
earnings, 410, *410*
education, 409–410
employment change, 410
employment opportunities, 409
employment trends, 410
job prospects, 410
licensure, 410
training, 409–410
work description, 408–409
work environment, 409
environmental scientists and specialists
additional information, 410–411
advancement, 407
certification and other qualifications, 407
earnings, 408, *408*
education, 406–407
employment change, 407–408
employment opportunities, 406
employment trends, 407
job prospects, 408, *408*
licensure, 407
related occupations, 408
training, 407
work description, 405–406
work environment, 406
EPC. *See* exercise physiologist, certified
epidemics, 4–5, 6
EPOs. *See* exclusive provider organizations
e-prescribing, 69
equine veterinarians, 387
ERAS. *See* Electronic Residency Application Service
ergonomists, 400
Escherichia coli, 387
essential hospitals and health systems, 16; *See also* public hospital
ethics, 93–94
code of ethics, 93–94
confidentiality and, 94
evidence-based practice, 198
exchange planning grants, 58
exclusive provider organizations (EPOs), 30–31
exercise physiologist, certified (EPC), 223
exercise physiologists
additional information, 225
advancement, 224
certification, 223–224
earnings, 224
education, 223–224
employment change, 224, *224*
employment opportunities, 223
employment trends, 224
job prospects, 224, *225*
kinesiotherapist, 224–225
licensure, 223–224
other qualifications, 224
related occupation, 224
training, 223
work description, 223
work environment, 223
expenditures, 26, 31–32
experimental/research psychologists, 230
exploratory surgery, 288
ExploreHealthCareers.org, 85, 270, 331, 343
external beam therapy, 291

F

family medicine physicians, 103, 108
family planning, 82
family practice, PAs and, 114
family services social workers, 241
FDA. *See* U.S. Food and Drug Administration
federal government related jobs, information sources for, 419
Federally Facilitated Marketplace (FFM), 52, 53, 55
federally funded primary care health centers, 13
federally qualified health centers (FQHC), 53
federal poverty level (FPL), 27, 56
Federation of State Boards of Physical Therapy, 200, 201, 203
Federation of State Massage Therapy Boards (FSMTB), 334, 336, 343
Federation of State Medical Boards, 110
fee-for-service
  ACOs and, 58–59
  payment, 26–27, 29
  PPOs and, 30–31
FFM. *See* Federally Facilitated Marketplace
FFM-P, 52
financial viability, 275
financing, healthcare
  capitation, 26
  costs and, 31
  EPOs and, 30–31
  expenditures and, 26, 31–32
  fee-for-service payment, 26–27, 29
  government-funded health insurance, 27–28
  HMOs and, 30–31
  insurance coverage, 31
  labor relations and, 29–30
  managed care, 29, 30–31
  overview, 26
  PPOs and, 30–31
  services reimbursement, 26–27
  technology and, 30
  wage and price controls and, 29
first responders, 282
fissure sealants, 141
fitness trainers, 218; *See also* athletic trainers
Fluency (BCS-F), 187
fluoroscopy, 288
fMRI. *See* functional magnetic resonance imaging
food safety and inspection veterinarians, 387
foreign body airway obstruction (FBAO), 90
Foreign Pharmacy Graduate Equivalency Examination (FPGEE), 166
Foreign Pharmacy Graduate Examination Committee (FPGEC), 166
forensics nurses, 122
formats, résumé, 420–421
FPGEC. *See* Foreign Pharmacy Graduate Examination Committee
FPGEE. *See* Foreign Pharmacy Graduate Equivalency Examination
FPL. *See* federal poverty level
FQHC. *See* federally qualified health centers
fragile X syndrome, 253
frail elderly, 38
franchises, 175
fraud, 96
free clinics, privately funded, 14
fringe benefit, 29
FSMTB. *See* Federation of State Massage Therapy Boards
functional format, résumé, 420
functional magnetic resonance imaging (fMRI), 66
functional teams, 95
The Future of Nursing: Leading Change, Advancing Health (report), 120

G

gamma scintillation camera, 306
Garfield, Stanley, 29
GDP. *See* gross domestic product
general physician, 103, 108; *See also* MD
genetic counselors
  additional information, 255
  advancement, 254
  certification and other qualifications, 254
  earnings, 255, *255*
  education, 254
  employment change, 255, *255*
  employment opportunities, 254
  employment trends, 254–255
  job prospects, 255
  licensure, 254
  related occupations, 255
  training, 254
  work description, 252–253
  work environment, 253
  work schedules, 253
geriatrics
  dentists and MDs and, 47
  education, 46–47
  optometrists, 174
  PAs and, 114
geriatric social workers, 241
gerontology, 129
geropsychologists, 229
glaucoma, 174
globalization, 5–6
government
  employers, 82
  healthcare and, 7, 12
  health IT and, 71
  hospital industry and, 15, 16
government-funded health insurance
  CHIP, 28
  history, 29
  Medicaid, 27–28
  Medicare, 27
government healthcare financing, 29
Graduate Record Examination (GRE), 388
Graduate Safety Practitioner (GSP), 401
grammatical patterns, 184
groomers, 393–394, 395
gross domestic product (GDP), 52
Group Health Cooperative, 29
group practice, 105
guidance and career counselors, 417
gynecologic sonographers, 299
gynecologists (GYNs), 104
gynecology, 116
gynecology nurse, *122*
GYNs. *See* gynecologists

H

HCBS (home and community-based services), 32
health, defined, 240
health and visual sciences, 175
healthcare, 33
  access to, 4, 53, 57
  categories, 12–13, 76
  costs (*See* costs)
  demographic changes impacting, 38
  distributive, 30
  government and, 7, 12
  history impacting, 4–5
  increasing costs of, 4, 8
  legal issues, 95–96
  looking forward, 5–7
  system overview, 12
  trends, 8
  twenty-first century and, 22
healthcare administrators, 274; *See also* health services managers
Health Care and Education Reconciliation Act of 2010, 52
healthcare executives, 274; *See also* health services managers
healthcare facilities, 13–14, 259
  ambulatory care centers, 13, 17
  community-based agencies, 13–14
  consumer's rights and, 18
  federally funded primary care health centers, 13
  hospitals, 14–17
  immediate care clinics, 13
  mental health services, 16, 17–18
  nonprofit facilities, 15
  outpatient clinics, 13
  privately funded free clinics, 14

public health services, 18–22
range of, 13
HealthCare.gov, 52
healthcare practitioners and technical occupations, 76
healthcare providers, effects on, 33
healthcare reform. *See* reform, healthcare
healthcare social workers, 241
healthcare support occupations, 76
healthcare workers, 76–77, 117
growth, 79
projected demand for, 77–78
health data analysts, 350
health education, 258
health educators, 258; *See also* specific types
additional information, 270
advancement, 260
certification and other qualifications, 260
earnings, 261, *261*
education, 260
employment change, 261
employment opportunities, 260, *260*
employment trends, 261
job prospects, 261, *261*
licensure, 260
related occupations, 261, *261*
training, 260
work description, 258–260
work environment, 260
Health Exchanges, 4, 52, 53, 57
health informatics, 350
health information administrators
additional information, 353
certification and other qualifications, 353
earnings, 353
education, 353
employment opportunities, 353
professional profiles, 351–352
related occupations, 353
work description, 349–350
work environment, 353
health information management (HIM), 348–349
health information personnel, 348
health information technician
additional information, 356
certification and other qualifications, 355
earnings, 356
education, 355
employment opportunities, 355
employment trends, 355
job prospects, 355, *356*
related occupations, 356
work description, 354
work environment, 354
health information technology (health IT), 8; *See also* medical technology
administrative applications and infrastructure, 69–70
clinical applications, 67–69
defined, 64
developments in, 70
examples, 64
goals of, 67
government and, 71
law and, 70–71
professional profiles, 68
health insurance
access to, 4
contraceptive coverage, 56
costs and, 31–32
coverage after ACA, 53t
employer-sponsored, 31
government-funded, 27–28
growth of, 15
healthcare reform and, 52–53, 55–56, 57
history, 29–31
immigrants, 14
labor relations and, 29–30
medical technology and, 64
premium, 31
premium subsidies for purchasing, in Marketplace, 56–57
prevention and, 6–7
private, 29, 31
prospective payment bill and, 30
refugee, 14
wage and price controls and, 29
Health Insurance Portability and Accountability Act (HIPAA), 69, 70, 71, 94
health IT. *See* health information technology
health literacy, 45–46
health maintenance organizations (HMOs), 26
capitation and, 30
explained, 30–31
history, 29
managers in, 276 (*See also* health services managers)
health outcomes, 4
health physicists, 400
health physics technicians, 403
Health Professional Shortage Areas (HPSAs), 83
health promotion, 199
health promotion services, 12
health psychologist, 229
health record, 92, 348
Health Resources and Services Administration (HRSA), 12, 13, 83, 85, 86
goals of, 77
health science librarians. *See* medical librarians
health services administration, 274–279
levels of, 275
health services managers, 274
additional information, 278–279
advancement, 277
certification and other qualifications, 277
earnings, 278, *278*
education, 276–277
employment change, 278, *278*
employment opportunities, 276
employment trends, 277
licensing, 277
related occupations, 278
training, 276–277
work description, 274–276
work environment, 276
health teams, 95
healthy behavior, 92
hearing aid dispenser, 190
hearing aids, 184
hearing impairments, 184–185
causes of, 184
forms, 184
heart disease, 5
lifestyle factors and, 6–7
hematology specialists and technologists, 325
HHAs. *See* home health agencies
HHS. *See* U.S. Department of Health and Human Services
High deductible health plan (HDHP), 31
high-frequency transducers, 300
HIM. *See* health information management
HIPAA. *See* Health Insurance Portability and Accountability Act
histotechnicians, 326
histotechnologists, 326
HIT Certified Manager (HITCM-PP), 277
HITECH Act (2009), 69
HIV (human immunodeficiency virus), 5
HMOs. *See* health maintenance organizations
Hobby Lobby v. Burwell, 56
Holter monitoring, 303
home and community-based services (HCBS), 32
home health agencies (HHAs), 43
home health aides
additional information, 377
certification and advancement, 375–376
earnings, 376, *376*
education, 375–376
employment change, 376
employment opportunities, 375
employment trends, 376
job prospects, 376, *376*
licensure, 375
other qualifications, 375
related occupations, 376
training, 375

work description, 374
work environment, 375
home health care, 209
home healthcare nurses, 123
home healthcare services, 12
as employer, 81
homemaker services, 43
horse trainers, 395
hospice, 41, 43
hospice and palliative care social workers, 241
hospice and palliative medicine (HPM), 104–105, 108
hospice nurse, *122*
hospitalists, 104, 105 108
hospital nurses, 123
Hospital Readmission Reduction Program (HRRP), 27, 54, 58
hospitals, 12
administration, 276
categorizing, 15
community, 15
development and services, 14–17
as employer, 79–80
government and, 15, 16
history, 14–15
network, 15
outpatient clinics, 17
private, 15
proprietary, 15
public, 15–16
system, defined, 15
types of, 15–16
voluntary, 15
HPM. *See* hospice and palliative medicine
HPSAs. *See* Health Professional Shortage Areas
HRRP. *See* Hospital Readmission Reduction Program
HRSA. *See* Health Resources and Services Administration
HS-BCP. *See* Human Service Board Certified Practitioner
Humane Society of the United States, 395
Human Genome Project, 8, 252
human immunodeficiency virus (HIV), 5
Human Service Board Certified Practitioner (HS-BCP), 247
hygiene, 4

I

IADLs. *See* independent acts of daily living
ICD-10. *See* International Classification of Diseases-10
IDEA. *See* 2004 Individuals with Disabilities Education Act
immediate care clinics, 13
immigrants, health insurance and, 14
immunology technologists/scientists, 325
independent acts of daily living (IADLs), 266
Indian Health Service (IHS), 12, 16, 17, 85, 86
indicators, of healthcare costs, 58
Individualized Supervised Practice Pathways (ISPPs), 156
2004 Individuals with Disabilities Education Act (IDEA), 188
industrial ecologists, 406
industrial hygiene technician, 403
industrial hygienists, 400
industrial-organizational psychologists, 232
industrial psychologists, 229
infant mortality, 5
infants
genetic screening, 253
hearing loss screening, 184, *184*
infection control, 90
infection control nurses, 122
infectious disease, 4, 5–6
influenza, 6
informational interviews, 416
infrastructure, health IT, 69–70
infusions, 164
injury prevention, 219
injury-preventive devices, 218
inner city employment opportunities, 82–83
innovations, technology, 65–67
inpatient psychiatric services for individuals under age 21, 40–41
Institute of Medicine, 120
institutional services, 40
institution for mental diseases (IMD), services of, 41
instrumental activities of daily living (IADLs), 38
insurance. *See* health insurance
insurance claims, 348
intermediate care facilities for people with intellectual disability (ICF/ID), 40
internal medicine, PAs and, 114
Internal Revenue Service (IRS), 56
International Classification of Diseases (ICD)-10, 69
Internet resources, 417
internists, 104, 108
internships, 168
interoperability, 69
interpreters, 78
interventional X-ray machines, 65–66
interviews, informational, 416
invasive cardiology, 302
ionizing radiation, 288
ISPPs. *See* Individualized Supervised Practice Pathways

J

JAN. *See* Job Accommodation Network
Job Accommodation Network (JAN), 418
job boards, 417–418
job prospects. *See* specific career
Joint Commission on Allied Health Personnel in Ophthalmology, 367
Joint Commission on National Dental Examinations, ADA, 143
Joint Review Committee on Education in Cardiovascular Technology, 304
Joint Review Committee on Education in Diagnostic Medical Sonography, 302
Joint Review Committee on Education in Radiologic Technology (JRCERT), 290, 291
Joint Review Committee on Education Programs in Nuclear Medicine Technology, 307, 308
JRCERT. *See* Joint Review Committee on Education in Radiologic Technology

K

Kaiser Permanente, 29
keepers, 394
kennel attendants, 394
kinesiotherapists, 218, 224–225
King v. Burwell, 57

L

laboratories, as employer, 81–82
laboratory team, 324
labor unions, as career information source, 416
language disorder, 184
laser surgery, 174
lawsuits, 95–96
abuse, 96
fraud, 96
malpractice, 95, 96
negligence, 95–96
LCME. *See* Liaison Committee on Medical Education
legal issues, in healthcare
career development and, 95–96
lawsuits, 95–96
right to practice, 95
legal requirements. *See* certification; education; licensure
legislation
healthcare reform and, 52–53
health IT and, 70–71
relationship with confidentiality, 94
lensometer, 180
Liaison Committee on Medical Education (LCME), 106
librarians. *See* medical librarians
libraries, as career information source, 417
licensed clinical social workers (LCSWs), 241

licensed practical nurse/licensed vocational nurse (LPN/LVN), 76, 81, 120
additional information, 134–135
advancement, 133
earnings, 134, *134*
education, 133
employment change, 133–134
employment opportunities, 120, *121*, 133
employment trends, 133
job prospects, 134, *134*
licensure, 133
other qualifications, 133
projected growth rates, 120, *121*
related occupations, 134
responsibilities, 120
training, 133
work description, 132
work environment, 132–133
licensing, 95
licensure
animal care and service workers, 395
APRNs, 130
athletic trainers, 220
audiologists, 190
cardiovascular technologists and technicians, 304
career planning and, 84
CHWs, 263
clinical laboratory scientists and technicians, 327
dental assistants, 146
dental hygienists, 143
dentists, 139
dietitians, 156
dispensing opticians, 178
EMT-paramedics, 284
environmental science and protection technicians, 410
environmental scientists and specialists, 407
exercise physiologists, 223–224
genetic counselors, 254
health educators, 260
health services managers, 277
home health aides, 375
LPN/LVN, 133
massage therapists, 336
MD and DO, 106
nuclear medicine technologists, 307
nursing assistants and orderlies, 369
occupational health and safety specialists, 401
occupational health and safety technicians, 404
occupational therapists, 211
occupational therapy assistants and aides, 214
O&M specialists, 266
optometrists, 175
orthotics and prosthetics (O&P), 204
PA, 116
pharmacists, 166
phlebotomists, 330
physical therapist assistants and aides, 201
physical therapists, 198
podiatrists, 109
psychiatric technicians and aides, 380
psychologists, 231
radiation therapists, 294
respiratory therapists, 317
RNs, 124
RTs, 339
school health educators, 262
social workers, 243
speech-language pathologists, 187
substance abuse and behavioral disorder counselors, 235–236
veterinarians, 389
veterinary technologists and technicians, 392
VRTs, 267
life expectancy, 5, 6
lifestyle, 6–7
Lincoln Regional Center, 16
linear accelerators, 291
livestock health, 386
livestock/large animal veterinarians, 387
loans, career planning and, 83, 86
local libraries, as career information source, 417
longevity, 5
long-term care, 40–41; *See also* nursing facilities (NF)/nursing homes
community long-term services, 41–44
inpatient psychiatric services for individuals under age 21, 40–41
intermediate care facilities for people with intellectual disability (ICF/ID), 40
nurses in, 120
nursing facilities (NF), 41
privately funded, 41
services of institution for mental diseases (IMD), 41
long-term care facilities, 80
long-term care nurses, 123
long-term services and supports (LTSS), 32, 40–41
low-vision rehabilitation, 174; *See also* visual rehabilitation therapists
LPN/LVN. *See* licensed practical nurse/licensed vocational nurse
LPN-to-BSN, 120
LTSS. *See* long-term services and supports
lung capacity, 314

M

magnetic resonance imaging (MRI), 288, *289*, 298
magnetic resonance scanners, 298
maldistribution of health personnel, 82
malpractice, 95, 96
mammography, 288
managed care, 29, 30–31
managed care organizations (MCOs), 26
explained, 30–31
management, need for, 274
management dietitian nutritionists, 153–154
marketing, 275
Marketplace, 52
premium subsidies for purchasing health insurance in, 56–57
Massage and Bodywork Licensing Examination (MBLEx), 334, 336
Massage License Requirements by State, 343
massage therapists, 334–335
advancement, 336
certification and other qualifications, 336
earnings, 337
education, 336
employment change, 337
employment opportunities, *335*, 335–336
employment trends, 336–337
job prospects, 337, *337*
licensure, 336
related occupations, 337
training, 336
work description, 335
work environment, 335
massage therapy, 334
Master Certified Health Education Specialist (MCHES), 260
master of library science (MLS) degree, 360
master of science in nursing (MSN), 120, 124
master patient index (MPI), 69
master's degree in social work (MSW), 243
math skills, 92
maxillofacial surgeon, 138
MBLEx. *See* Massage and Bodywork Licensing Examination
MCAT. *See* Medical College Admission Test
MCHES. *See* Master Certified Health Education Specialist
MCOs. *See* managed care organizations
MD (Medical Doctor), 76, 140
additional information, 110–111
advancement, 107
certification and other qualifications, 106–107

demand for, 102–103, 107
earnings, 107, 108
education, 106–107
employment change, 107
employment opportunities, 106, *106*
employment trends, 107
geriatrics and, 47
hospice and palliative medicine (HPM), 104–105
hospitalists, 104, 105
job prospects, 107
licensure, 106
perceptions about, 102
related occupations, 108
residency, 106
training, 106
work description, 103–104
work environment, 105–108
Meals on Wheels, 45
Medicaid, 4, 12, 13, 14, 18, 26, 187, 201, 305
costs and, 32
dual eligibles, 27
for elderly, 40
establishment of, 29
FPL, 27
healthcare reform and, 52, 53, 54, 55–56, 57
HHAs, 43
minimum essential coverage and expansion after ACA, 55–56
overview about, 27–28
Medicaid expansion, 53
Medicaid spousal impoverishment provisions, 40
medical and clinical laboratory scientists and technicians. *See* clinical laboratory scientists and technicians
medical and health services managers. *See* health services managers
medical assistants, 76
additional information, 367–368
administrative, 364
advancement, 366
certification and other qualifications, 366
clinical, 364
earnings, 367, *367*
education, 366
employment change, 366–367
employment opportunities, 366
employment trends, 366
job prospects, 367, *367*
ophthalmic, 364
optometric, 364
podiatric, 364–365
professional profiles, 365
related occupations, 367
training, 366
work descriptions, 364
work environment, 366
Medical College Admission Test (MCAT), 106, 109, 388
Medical Doctor. *See* MD
medical equipment, 219
Medical Group Management Association, 278
medical home, 102–103
Medical Laboratory Technician Certification, 327
medical librarians
additional information, 361
certification and other qualifications, 361
earnings, 361
education, 360–361
employment opportunities, 360
rehabilitation services and, 359
related occupations, 361
work description, 359
work environment, 360
Medical Library Association, 361
medical math, 92
medical nutrition therapy, 153, 157
medical social workers, 241
medical technology, 64–66; *See also* health information technology (health IT)
defined, 64
examples, 64
growth of, 64
health insurance and, 64
innovations, 65–67
overview, 64
medical terminology, 90
medical transcriptionists
additional information, 359
certification and other qualifications, 358
earnings, 359, *359*
education, 358
employment opportunities, 357–358
home-based offices, 357
job prospects, 358, *358*
outsourcing and, 358
related occupations, 359
work description, 356–357
work environment, 357
Medicare, 7, 12, 13, 18, 26, 187, 201, 209, 274
costs and, 31
DRGs and, 30
dual eligibles, 27
for elderly, 39–40
establishment of, 29
HHAs, 43
overview about, 27
Medicare advantage, 40
Medicare Advantage Plans, 26, 52
Medicare Part D (drug plans), 7
Medicare reimbursement, 348
Medicare Shared Savings Program, 58–59
Medicare Supplemental Health Insurance, 40
medication profile, 164
Medigap insurance, 40
Ménière's disease, 184
mental health, 209, 228
mental health and substance abuse social workers, 241
Mental Health Parity and Addiction equity Act of 2008, 18
mental health services, 16, 17–18
methicillin-resistant *Staphylococcus aureus* (MRSA), 6
microbiologists, 408
microbiology specialists, 325
middle-level health workers, 114
midwifery, 128–129
migrant health programs, 82
military, career sources for, 419
mine examiner, 403
minimum essential coverage, to Medicaid after ACA, 55–56
minorities, employment opportunities for, 83
mobile technology, 70
molecular biology technologists, 325
mortality
history and, 4
infant, 5
leading causes of, 6
MPI. *See* master patient index
MPJE. *See* Multistate Pharmacy Jurisprudence Exam
MRI. *See* magnetic resonance imaging
MRI technologists, 288
MRSA. *See* methicillin-resistant *Staphylococcus aureus*
MSW. *See* master's degree in social work
MTs. *See* music therapists
multidisciplinary team, 208
Multistate Pharmacy Jurisprudence Exam (MPJE), 166, 167
muscle injuries, 218
Music Therapist-Board Certified (MT-BC), 343
music therapists (MTs), 342–343
music therapy, 342
mutations, 253
myocardial perfusion imaging, 306
mySkills myFuture, 418

N

NAACLS. *See* National Accrediting Agency for Clinical Laboratory Sciences
NABP. *See* National Association of Boards of Pharmacy
NAHC. *See* National Association for Home Care and Hospice

NAPLEX. *See* North American Pharmacist Licensure Exam
NASP. *See* National Association of School Psychologists
NASW. *See* National Association of Social Workers
NATA. *See* National Athletic Trainers' Association
National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), 327, 331
National Animal Control Association, 397
National Association for Addiction Professionals, 237
National Association for Home Care and Hospice (NAHC), 371, 375, 377
National Association for Practical Nurse Education and Service, 135
National Association of Boards of Pharmacy (NABP), 166, 167
National Association of Chain Drug Stores, 167
National Association of Clinical Nurse Specialists, 135
National Association of Dental Laboratories, 149
National Association of Emergency Medical Technicians, 285
National Association of Free & Charitable Clinics (NAFC), 14
National Association of Health Care Assistants, 371
National Association of Professional Pet Sitters, 395, 397
National Association of Recreational Therapy, 334
National Association of School Psychologists (NASP), 231, 233
National Association of Social Workers (NASW), 243, 248
National Association of Veterinary Technicians in America (NAVTA), 397
National Athletic Trainers' Association (NATA), 225
National Board Dental Examinations, 139
National Board for Certification in Dental Laboratory Technology, 149
National Board for Certification in Dental Technology, 149
National Board for Certification in Occupational Therapy, 211, 212, 215
National Board for Certified Counselors (NBCC), 236, 237
National Board for Respiratory Care (NBRC), 317, 318
National board of Certification and Recertification for Nurse Anesthetists (NBCRNA), 130
National Board of Certification & Recertification for Nurse Anesthetists, 135
National Board of Certified Counselors and Affiliates, 417
National Board of Examiners in Optometry, 175
National Board of Podiatric Medical Examiners, 111
National Board of Surgical Technology and Surgical Assistants, 310, 311
National Board of Veterinary Medical Examiners, 396
National Cancer Institute, 152
National Cancer Registrars Association, 355, 356
National Caucus and Center on Black Aging, 419
National Center for Competency Testing (NCCT), 309–310, 311, 330, 331
National Center for Health Statistics, 20, 41
National Certification Board for Diabetes Educators (NCBDE), 157
National Certification Board for Therapeutic Massage & Bodywork (NCBTMB), 334, 336, 343
National Certification Examination (NCE), 130–131
National Coalition of Creative Arts Therapies Associations (NCCATA), 334
National Coalition of Creative Arts Therapy Associations, 344
National Collegiate Athletic Association (NCAA), 219, 225
National Commission for Health Education Credentialing (NCHEC), 260, 270
National Commission on Certification of Physician Assistants (NCCPA), 116, 117
National Commission on Orthotic and Prosthetic Education (NCOPE), 204, 205
National Contact Lens Examiners (NCLE), 178, 180
National Council for Therapeutic Recreation Certification (NCTRC), 334, 339, 343
National Council licensure examination (NClEX), 124, 133, 134–135
National Council of State Boards of Nursing, 130, 133, 135
National Council on the Aging, 419
National Credentialing Agency for Laboratory Personnel, 327
National Dog Groomers Association of America, 395, 397
National Environmental Health Association (NEHA), 407, 411
National Environmental Health Science and Protection Accreditation Council (EHAC), 407, 411
National Federation of Independent business v. Sebelius, 56
National Federation of Licensed Practical Nurses, 133, 135
National Federation of Opticianry Schools, 179
National Healthcareer Association, 169, 170, 331, 367
national health expenditure (NHE), 58
National Health Service Corps (NHSC), 58, 83, 85, 86, 134, 243
National Health Student Loan Repayment Program, 83
National Highway Traffic Safety Administration, 285
National Institute for Occupational Safety and Health (NIOSH), 400
National Institute of Mental Health (NIMH), 17
National Institutes of Health (NIH), 12, 387
National League for Nursing, 124, 134
Nationally Certified Psychiatric Technician, 380
Nationally Certified School Psychologist (NCSP), 231
National Network of Career Nursing Assistants, 371
National Organization for Human Services, 249
National Organization on Disability, 418
National Pharmacy Technician Association, 170
National Physical Therapy Exam, 201
National Prevention Council, 6, 7
National Registry of Emergency Medical Technicians (NREMT), 283, 284, 285
National Society for Histotechnology, 331
National Society of Genetic Counselors (NSGC), 254, 255
National Study of Long-Term Care Providers (2012), 41
National Surgical Assistants Association, 310, 311
National Therapeutic Recreation Society, 343
navigators, 53
NAVTA. *See* National Association of Veterinary Technicians in America
NBCC. *See* National Board for Certified Counselors
NBCRNA. *See* National board of Certification and Recertification for Nurse Anesthetists
NCBDE. *See* National Certification Board for Diabetes Educators
NCBTMB. *See* National Certification board for Therapeutic Massage & Bodywork
NCCATA. *See* National Coalition of Creative Arts Therapies Associations

NCCPA. *See* National Commission on Certification of Physician Assistants
NCCT. *See* National Center for Competency Testing
NCE. *See* National Certification Examination
NCLE. *See* National Contact Lens Examiners
NClEX. *See* National Council licensure examination
NCLEX-PN, 133, 135
NCLEX-RN, 124, 134–135
NCOPE. *See* National Commission on Orthotic and Prosthetic Education
NCT. *See* nuclear cardiology
NCTRC. *See* National Council for Therapeutic Recreation Certification
negligence, 95–96
negotiation, 275
NEHA. *See* National Environmental Health Association
neighborhood health centers, 82
neonatology nurse, *122*
nephrology nurse, *122*
network, hospitals, 15
neuropsychologists, 229
neurosonographers, 300
neurosurgery, 104
newborn screening, 253
NHSC. *See* National Health Service Corps
NIH. *See* National Institutes of Health
NIMH. *See* National Institute of Mental Health
NIOSH. *See* National Institute for Occupational Safety and Health
NMTCB. *See* Nuclear Medicine Technology Certification Board
nonfarm animal caretakers, 393
noninvasive cardiology technology, 302–303
nonprofit facilities, 15
nonprofit organizations, health educators in, 259
North American Pharmacist Licensure Exam (NAPLEX), 166, 167
North American Veterinary Licensing Examination, 389
NPs. *See* nurse practitioners
NREMT. *See* National Registry of Emergency Medical Technicians
NSGC. *See* National Society of Genetic Counselors
nuclear cardiology (NCT), 306
nuclear medicine, 306
nuclear medicine technologists, 305
  additional information, 308
  advancement, 307
  certification, 307
  earnings, 308
  education, 307
  employment change, 308
  employment opportunities, 307
  employment trends, 307–308
  job prospects, 308, *308*
  licensure, 307
  other qualifications, 307
  related occupations, 308
  training, 307
  work descriptions, 306
  work environment, 306
Nuclear Medicine Technology Certification Board (NMTCB), 307, 308
nuclear pharmacists, 164
nurse practitioners (NPs), 129, 131
nurse(s), 76; *See also* advanced practice registered nurses; licensed practical nurse/licensed vocational nurse; registered nurses
  anesthetist, 120, 127, 128
  demand for, 120
  educational pathways, 120, *121*
  employment opportunities, 120, *121*
  future of, 120–121
  geriatrics and, 47
  IOM report, 120
  midwives, 120, 127, 128–129
  practitioners, 120, 127, 129
  recommendations for, 120
  specialists, 129
nursing, future of, 120–121
nursing assistants and orderlies, 76
  additional information, 371
  advancement, 369–370
  certification and other qualifications, 369
  earnings, 370, *371*
  education, 369–370
  employment change, 370
  employment opportunities, 369
  employment trends, 370
  job prospects, 370, *370*
  licensure, 369
  related occupations, 371
  training, 369
  work description, 368–369
  work environment, 369
nursing facilities (NF)/nursing homes, 32, 41, 124
  administration, 276
  as employer, 81
  history, 41
  OBRA 87 standards, 41
  skilled (SNF), 41
nutrition, history and, 4
nutritionists, 152; *See also* dietitians
nutrition support pharmacists, 164

O

OAT. *See* Optometry Admissions Test
Obama, Barack, 4, 52, 55
ObamaCare, 52
obesity, 6–7, 235
  rates, 7
OBs. *See* obstetricians
obstetricians (OBs), 104, 108
obstetric sonographers, 299
occupational health and safety specialists
  additional information, 410–411
  advancement, 401
  certification and other qualifications, 401
  earnings, 402, *402*
  education, 401
  employment change, 402
  employment opportunities, 401
  employment trends, 402
  job prospects, 402, *402*
  licensure, 401
  related occupations, 402
  training, 401
  work description, 400
  work environment, 400–401
occupational health and safety technicians
  additional information, 410–411
  advancement, 404
  certification and other qualifications, 404
  earnings, 405, *405*
  education, 403–404
  employment change, 404
  employment opportunities, 403, *403*
  employment trends, 404
  job prospects, 404, *404*
  licensure, 404
  similar occupations, 405
  training, 404
  work description, 402–403
  work environment, 403
Occupational Health and Safety Technologist Certification (OHST), 404
occupational hygiene technician, 403
occupational hygienists, 400, 403
Occupational Outlook Handbook, 418
Occupational Safety and Health Administration (OSHA), 82, 400
Occupational Therapist, Registered (OTR), 211
occupational therapists, 76
  additional information, 212
  advancement, 211
  certification and other qualifications, 211
  earnings, 212, *212*
  education, 211
  employment change, 211–212
  employment opportunities, 209–211
  employment trends, 211
  job prospects, 212, *212*
  licensure, 211
  professional profiles, 210
  related occupations, 212

training, 211
work description, 208–209
work environment, 209
occupational therapy, 208
goals of, 209
occupational therapy assistants and aides
additional information, 215
advancement, 214
certification and other qualifications, 214
earnings, 215, *215*
education, 213–214
employment change, 214
employment opportunities, 213
employment trends, 214
job prospects, 214, *215*
licensure, 214
related occupations, 215
training, 214
work description, 213
work environment, 213
occupations, healthcare
categories, 76
projected demand for, 77–78
ocular disease, 174
ODs. *See* doctors of optometry
Office of Disability Employment Policy, 418
Office of Personnel Management, 397
offices of health practitioners, as employer, 80–81
OHST. *See* Occupational Health and Safety Technologist Certification
1973 Older Americans Act (OAA), 44
older workers, career sources for, 418–419
"old-old," 38
Omnibus budget Reconciliation act of 1987 (OBRA 87), 41
O&M specialists. *See* orientation and mobility specialists
oncology dietitians, 152
O*NET, 418
on-the-job training, 168, *169,* 394, 404
ophthalmic laboratory technicians, 177
additional information, 181
certification and advancement, 181
earnings, 181
education, 180–181
employment change, 181
employment opportunities, 180
employment trends, 181
job prospects, 181, *181*
related occupations, 181
training, 180–181
work description, 180
work environment, 180
ophthalmic medical assistants, 364
ophthalmologists, 174, 180
OPRESCAS. *See* Orthotics and Prosthetics Residency Centralized Application Service
opticians, 177; *See also* dispensing opticians
Opticians Association of America, 179
optics, 175
optometric assistants, 364
optometrists, 140
additional information, 177
advancement, 176
earnings, 176, *177*
education, 175–176
employment change, 176
employment opportunities, 175
employment trends, 176
job prospects, 176, *176*
licensure, 175
other qualifications, 175–176
related occupations, 176
training, 175
work description, 174
work environment, 174
Optometry Admissions Test (OAT), 175
oral pathologists, 138
oral surgeon, 138
orderlies, 368–369; *See also* nursing assistants and orderlies
orientation and mobility (O&M) specialists, 258
additional information, 270
advancement, 266
certification and other qualifications, 266
earnings, 266
education, 265–266
employment opportunities, 265
job prospects, 266
licensure, 266
related occupations, 266
training, 265
work description, 264–265
work environment, 265
orthodontists, 138
orthopedic surgery, 104
orthotic and prosthetic technician, 203
orthotics and prosthetics (O&P)
additional information, 205
certification and other qualifications, 204
earnings, 205, *205*
education, 204
employment change, 205
employment opportunities, 204
employment trends, 205
job prospects, 205, *205*
licensure, 204
related occupations, 205
training, 204
work description, 203
work environment, 204
Orthotics and Prosthetics Residency Centralized Application Service (OPRESCAS), 204
orthotists, 82
OSHA. *See* Occupational Safety and Health Administration
osteopathic manipulative medicine (OMM), 103
osteopathic physicians, 103
otolaryngology, 104
OTR. *See* Occupational Therapist, Registered
outcomes assessment, 198
out-of-pocket, 31
outpatient cardiac rehabilitation centers, 13
outpatient clinics, 13, 17
as employer, 81–82
outsourcing, transcription work, 358
oxygen or oxygen mixtures, 315

P

PA. *See* physician assistant
PACS. *See* picture archiving and communication system
PAHCOM. *See* Professional Association of Healthcare Office Management
PAHCS. *See* Professional Association of Healthcare Coding Specialists
palliative care, 105
paraffin baths, 200
paramedics, 282, 283; *See also* EMT-paramedics
Paraprofessional Healthcare Institute, 377, 379
Parkinson's disease, 341
PASRR. *See* Preadmission Screening and Resident Review
Patient Care Partnership, 18
patient-centered teams, 95
patient navigators, 259
patient portal, 69
Patient Protection and Affordable Care Act, 52
patient registration, 65
patient registration process, 70
Patient's Bill of Rights, 18
payment reforms, 54
PCAT. *See* Pharmacy College Admissions Test
PCPs. *See* primary care providers/practitioners
Pediatric Audiology Specialty Certification® (PASC®), 190
pediatric dentists, 138
pediatricians, 104, 108
Pediatric Nursing Certification Board, 124, 134
pediatric oncology, 122
pediatric otolaryngologist, 184
pediatric RDNs, 152
pediatrics
optometrists and, 174
PAs and, 114

pedigree, 253
pedorthists, 203
perceptual skills, 208
periodontists, 138
personal and home care aide, 78, 79
  additional information, 379
  advancement, 378
  certification and other qualifications, 378
  earnings, 378–379, *379*
  education, 377–378
  employment change, 378
  employment opportunities, 377, *378*
  employment trends, 378
  job prospects, 378, *379*
  related occupations, 379
  training, 378
  work description, 377
  work environment, 377
personal care and service occupations, 76
personal trainers, 218
personnel psychologists, 229
PET. *See* positron emission tomography
pet groomers, 393–394, 395
pet sitters, 394
pharmaceutical chemistry, 166
pharmaceuticals, 164
pharmaceutics, 166
pharmacists
  additional information, 167–168
  advancement, 166
  consultant, 165
  earnings, 167
  education, 165–166
  employment change, 166–167
  employment opportunities, 165
  employment trends, 166
  job prospects, 167, *167*
  licensure, 166
  nuclear, 164
  nutrition support, 164
  other qualifications, 166
  radiopharmacists, 164
  related occupations, 167
  work description, 164–165
  work environment, 165
pharmacoeconomics, 167
pharmacology, 166
pharmacotherapists, 164
pharmacy administration, 166
Pharmacy College Admissions Test (PCAT), 165
pharmacy informatics, 167
pharmacy residencies, 166
Pharmacy Technician Certification Board (PTCB), 169, 170
pharmacy technicians and aides
  additional information, 170
  advancement, 169
  certification and other qualifications, 169
  earnings, 170
  education, 168–169
  employment change, 169
  employment opportunities, 168
  employment trends, 169
  job prospects, 169, *170*
  related occupations, 170
  training, 168–169
  work description, 168
  work environment, 168
phenylketonuria (PKU), 253
PHI. *See* protected health information
philosophy, 275
phlebotomists, 326
  additional information, 330–331
  advancement, 330
  certification and other qualifications, 330
  earnings, 330
  education, 329
  employment change, 330
  employment opportunities, 329
  employment trends, 330
  job prospects, 330
  licensure, 330
  related occupations, 330
  training, 329
  work description, 329
  work environment, 329
photosensitivity, 196
PHS. *See* U.S. Public Health Service
physical disabilities, 208
physical therapist assistants and aides
  additional information, 202–203
  advancement, 201
  earnings, 202, *202*
  education, 201
  employment change, 201–202
  employment opportunities, 201
  employment trends, 201–202
  job prospects, 202, *202*
  licensure, 201
  related occupations, 202
  training, 201
  work description, 200
  work environment, 200
Physical Therapist Centralized Application Service (PTCAS), 198
physical therapists, 76, 196
  additional information, 200
  advancement, 199
  certification and other qualifications, 198
  earnings, 199, *199*
  education, 198–199
  employment change, 199
  employment opportunities, 198
  employment trends, 199
  job prospects, 199, *199*
  licensure, 198
  professional profiles, 197
  related occupations, 199
  training, 198
  work description, 196–198
  work environment, 198
physical therapy, 196
physical therapy assistants, 76
physician assistant (PA), 83, 102, 107
  additional information, 117
  certification and advancement, 116
  earnings, 117, *117*
  education, 115–116
  employment change, 116
  employment opportunities, 114
  employment trends, 116–117
  job prospects, 117, *117*
  licensure, 116
  as new profession, 114
  related occupations, 117
  training, 115–116
  work description, 114
  work environment, 114
Physician Payment Review Commission, 30
physician practice manager, 219
physicians. *See* MD
physicians' offices, 13
physiology, 90
picture archiving and communication system (PACS), 69
pit sealants, 141
plastic/reconstructive surgery, 104
pneumonia, 4, 6
podiatric medical and surgical residency (PMSR) program, 109
podiatric medical assistants, 364–365
podiatrists, 140
  additional information, 111
  advancement, 110
  certification and other qualifications, 109–110
  earnings, 110
  education, 109–110
  employment change, 110
  employment opportunities, 109
  employment trends, 110
  job prospects, 110
  licensure, 109
  overview, 108
  related occupations, 110
  training, 109
  work description, 108–109
  work environment, 109
poison control, 82
policies, 274
politics
  of healthcare reform, 52–53
  public health services and, 20
polysomnography, 315
positron emission scanners, 298
positron emission tomography (PET), 306, 308

postsecondary institutions, as career information source, 417
PPOs. *See* preferred provider organizations
Praxis Examination, 187
Preadmission Screening and Resident Review (PASRR), 40
predictive genetic counseling, 253
preferred provider organizations (PPOs)
explained, 30–31
fee-for-service and, 30–31
premium, health insurance, 31
cost of, 57
premium subsidies, for purchasing health insurance in Marketplace, 56–57
prenatal screening, 253
prescribed drug regimen, 324
prevention, 12
CDC and, 20
healthcare reform and, 54
health insurance and, 6–7
public health services and, 18
preventive medicine, 103
primary care, 17, 114
career planning and, 82
federally funded, 13
nurses in, 120
physicians, 77
specialists, 102
primary care providers/practitioners (PCPs), projected shortage of, 102–103, 120
primary care sports medicine physicians, 218
primary health care opportunities, 82
Privacy and Security Rules, 69
Privacy Officer, 350
private businesses and corporations, health educators in, 259
private health insurance, 26
costs and, 31
healthcare reform and, 58
history and, 29–30
private hospital, 15
privately funded free clinics, 14
private sector, health IT and, 71
professional, 92
Professional Association of Healthcare Coding Specialists (PAHCS), 355, 356
Professional Association of Healthcare Office Management (PAHCOM), 277, 278
professional associations, health IT and, 71
professional certification, 84
professionalism, 92–95
confidentiality and, 94
ethics and, 93–94
health teams, 95
overview, 92–93
professional management, need for, 274
professional profiles
athletic trainers, 221
audiologists, 192
career development and, 91
dental hygienists, 142
dietitians, 155
health information administrators, 351–352
health IT and, 68
medical assistants, 365
occupational therapists, 210
physical therapists, 197
radiation therapists, 292
RNs, 126
substance abuse and behavioral disorder counselors, 234
VRTs, 268
professional registration, 84
professional societies, as career information source, 416
Program of all-Inclusive Care for the elderly (PaCe), 44
programs, 275
proprietary hospital, 15
prospective payment bill, 30
prosthetists, 82
prosthodontists, 138
protected health information (PHI), 71
psychiatric genetic counseling, 253
psychiatric nurse, *122*
psychiatric technicians and aides
additional information, 381
advancement, 380
certification, 380
earnings, 381, *381*
education, 380
employment change, 380–381
employment opportunities, 380
employment trends, 380
job prospects, 381, *381*
licensure, 380
other qualifications, 380
related occupations, 381
training, 380
work description, 379
work environment, 380
psychiatrists, 104, 108
psychiatry, 116
psychological treatment, 240
psychological variables, 229
psychologists
additional information, 233
certification and advancement, 231–232
earnings, 233, *233*
education, 230–232
employment change, 232
employment opportunities, 230
employment trends, 232
job prospects, 232, *232*
licensure, 231
other qualifications, 231
related occupations, 233
training, 230–231
types of, 229–230
work description, 228–230
work environment, 230
psychology, 228
psychometric psychologists, 229
PTCAS. *See* Physical Therapist Centralized Application Service
PTCB. *See* Pharmacy Technician Certification Board
public health, 388
public health departments, 82
health educators in, 259
public health services
career opportunities, 20
CDC and, 20
evolution of, 20–22
functions of, 19–20
goals of, 18
HHS and, 18–22
nurses in, 120
PHS and, 18
politics and, 20
practitioners, 19
prevention and, 18
public hospital, 15–16
pulmonary care hospitals, 79

Q

QHP. *See* qualified health plan
qualified health plan (QHP), 53
quality improvement analysts, 354
quality of health care, cost control and improvement of, 53–54

R

radiation therapists
additional information, 295
advancement, 294
certification and other qualifications, 294
earnings, 295
education, 294
employment change, 294
employment opportunities, 294
employment trends, 294–295
job prospects, 295, *295*
licensure, 294
professional profiles, 292
related occupations, 295
training, 294
work description, 291–293
work environment, 293–294
radiation therapy, 291
radioactive pharmaceuticals, 164
radiographers, 288

radiologic technologists and technicians
additional information, 291
advancement, 290
certification and other qualifications, 290
earnings, 291, *291*
education, 289–290
employment change, 290
employment opportunities, 289
employment trends, 290–291
job prospects, 290–291, *291*
licensure, 290
related occupations, 291
training, 289–290
work description, 288
work environment, 289
radiologist, 288
radionuclides, 306
radiopharmaceuticals, 306
radiopharmacists, 164
RBT™. *See* Registered Behavior Technician™
RCEP. *See* registered clinical exercise physiologist
RCIS. *See* Registered Cardiovascular Invasive Specialist
RCS. *See* Registered Cardiac Sonographer
RDCS. *See* Registered Diagnostic Cardiac Sonographer
RDMS. *See* Registered Diagnostic Medical Sonographers
R-DMT. *See* Registered Dance/movement Therapist
RDNs. *See* registered dietitian nutritionists
recreational sports, 219
recreational therapists (RTs)
additional information, 343–344
advancement, 339
art therapists, 340–341
certification and other qualifications, 339
community-based, 338
dance therapists, 341–342
earnings, 340, *340*
education, 338–339
employment change, 339
employment opportunities, 338, *338*
employment trends, 339
job prospects, 340, *340*
licensure, 339
music therapists, 342–343
related occupations, 340–343
training, 339
work description, 337–338
work environment, 338
recreation therapy, 334
reform, healthcare, 4; *See also* Affordable Care Act (ACA)
ACA impact on costs, 57–59
challenges to launching ACA, 55
CHIP and, 52, 55, 59
healthcare access by state, 57
HHS and, 52–53
insurance expansions under, 53–56, 57
legislation, 52–53
Medicaid and, 52, 53, 54, 55–56
overview, 52–53
states and, 57
supreme court decisions and changes to ACA, 55–57
timeline for implementing ACA, 53–54
refugee, 14
Registered Apprentice Program, 375, 378
Registered Art Therapist (ATR), 341
Registered Behavior Technician™ (RBT™), 269, 270
Registered Cardiac Sonographer (RCS), 304
Registered Cardiovascular Invasive Specialist (RCIS), 304
registered clinical exercise physiologist (RCEP), 218, 224
Registered Dance/movement Therapist (R-DMT), 342
Registered Diagnostic Cardiac Sonographer (RDCS), 304
Registered Diagnostic Medical Sonographers (RDMS), 300
registered dietitian nutritionists (RDNs), 152, 153, 156
Registered Environmental Health Specialist or Registered Sanitarian (REHS/RS), 407
Registered Healthcare Documentation Specialist (RHDS), 358
Registered Health Information Administrator (RHIA), 353
Registered Health Information Technicians (RHIT), 355
registered nurses (RNs), 81
additional information, 134–135
advancement, 124
certification and other qualifications, 124
earnings, 127, *127*
education, 123–124
employment change, 125
employment opportunities, 120, *121,* 123
employment trends, 124–125
job prospects, 125, *127*
licensure, 124
overview, 121
professional profiles, 126
projected employment for, 120
projected growth rates, 120, *121*
related occupations, 127
responsibilities, 120
shortages of, 77
specialty areas and responsibilities, *122*
training, 124
work description, 121–123, *122*
work environment, 123
Registered Respiratory Therapist (RRT), 317; *See also* respiratory therapists
Registered Vascular Specialist (RVS), 304
Registered Vascular Technologist (RVT), 304
registration, professional, 84
regulations, health IT and, 70–71
rehabilitation, 12–13, 41, 199
medical librarian and, 359
rehabilitation center, 209
rehabilitation hospitals, 79
rehabilitation nurse, *122*
rehabilitation psychologists, 229–230
REHS/RS. *See* Registered Environmental Health Specialist or Registered Sanitarian
reimbursement; *See also* health insurance
Medicare, 348
services, 26–27
Religious Freedom Restoration Act of 1993 (RFRA), 56
repetitive stress injuries, 222
reproductive technology, 254
research, 196, 388
research dietitian nutritionists (RDNs), 154
research psychologists, 230
research veterinarians, 387
residential care, 41
residential care communities, 42
residential care facilities, as employer, 81
respiratory therapists
additional information, 318
advancement, 317
certification, 317
earnings, 317
education, 316–317
employment change, 317
employment opportunities, 316
employment trends, 317
job prospects, 317, *317*
licensure, 317
other qualifications, 317
training, 316–317
work description, 314–315
work environment, 316
respiratory therapy technicians
additional information, 319
earnings, 318
education, 318
employment trends, 318
job prospects, 317, *317*
related occupations, 319
work description, 318
work environment, 318
résumé

chronological format, 420
combination format, 420
comparison, 421
creating an effective, 420–421
formats, 420–421
functional format, 420
purpose of, 420
targeted format, 421
Retirement Jobs.com, 419
RHDS. *See* Registered Healthcare Documentation Specialist
RHIA. *See* Registered Health Information Administrator
RHIT. *See* Registered Health Information Technicians
right to practice, 95
RNs. *See* registered nurses
RN-to-BSN, 124
RN-to-MSN, 124
robots, 66
RRT. *See* Registered Respiratory Therapist
RTs. *See* recreational therapists
rural employment opportunities, 82–83
RVS. *See* Registered Vascular Specialist
RVT. *See* Registered Vascular Technologist

S

safety, 90
Safety Trained Supervisor (STS), 404
salaries, 413–415; *See also* earnings
projections for, 77–78
salmonellosis, 5
SBM. *See* State-based Marketplace
SCHIP (State Children's Health Insurance Program), 28
scholarships, 86
career planning and, 83
school; *See also* specific school
selection, 83–84
school health educators, 258
additional information, 270
certification and other qualifications, 262
education, 262
employment opportunities, 262
licensure, 262
training, 262
work description, 261–262
work environment, 262
School Nutrition Association, 159, 161
School Nutrition Specialist (SNS), 159, 161
school psychologists, 230
school social workers, 240, 241
secondary care, 17
self-contained underwater breathing apparatus (SCUBA), 395
senior centers, 44, 45
Senior Community Service Employment Program, 419
sepsis, 6
September 11, 2001 attack, 282
services of institution for mental diseases (IMD), 41
SHOP. *See* Small Business Health Options Program Exchange
side effects, 164
single photon emission computed tomography (SPECT), 308
skilled nursing facility (SNF), 41
skin puncture, 329
SLPs. *See* speech-language pathologists
Small Business Health Options Program Exchange (SHOP), 52
smoking, 6–7
rates, 7
SNF. *See* skilled nursing facility
social and human service assistants
additional information, 248–249
advancement, 247
certification and other qualifications, 247
earnings, 248, *248*
education, 246–247
employment change, 247–248
employment opportunities, *247*, 247–248
employment trends, 247
job prospects, 248, *248*
related occupations, 248
training, 247
work description, 245–246
work environment, 246
social networking, as career information source, 418
social psychologists, 230
Social Security Act, 40
Social Security Act of 1935, 19
Social Security Act of 1965, 15
social work, 240
social work administrators, 242
social workers
advancement, 243
certification and other qualifications, 243
earnings, 244–245, *245*
education, 242–243
employment change, 244
employment opportunities, 242, *242*
employment trends, 244
job prospects, 244, *244*
licensure, 243
related occupations, 245
training, 242–243
types of, 240–241
work description, 240–242
work environment, 242
social work planners and policy makers, 242
Society for Vascular Ultrasound, 305
Society of Diagnostic Medical Sonography, 302
Society of Hospital Medicine, 104
Society of Nuclear Medicine and Molecular Imaging, 308
soft tissue mobilization, 196
solo practitioners, 105
sonographers, 298–299; *See also* diagnostic medical sonographers
abdominal, 299
breast, 300
neurosonographers, 300
sonography, 298
specialty board certification, 157
specialty hospitals, 79, 80
SPECT. *See* single photon emission computed tomography
speech
disorder, 184
impairments, 184
speech-language pathologists (SLPs), 184
advancement, 187
certification and other qualifications, 187
earnings, 188, *188*
education, 186–187
employment change, 187–188
employment opportunities, 186, *186*
employment trends, 187
job prospects, 188, *188*
licensure, 187
related occupations, 188
training, 187
work description, 185–186
work environment, 186
speech pathologists, 76
speech recognition software, 70
sports centers, 222
sports medicine, 198, 218
standards for pure food from animal sources, 386
State-based Marketplace (SBM), 52, 53, 55
State Board of Dental Examiners, 144
State Children's Health Insurance Program (SCHIP), 28
State Labor Market Information, 418
State Loan Repayment Program, 83
statistics, 349
sterilization, methods, 92
strategic planning, 275
stress testing, 303
stroke, in elderly, 38
STS. *See* Safety Trained Supervisor
Student to Service Loan Repayment Program, 83
substance abuse and behavioral disorder counselors
additional information, 237
certification, 235–236
earnings, 236, *236*
education, 235–236

employment change, 236
employment opportunities, 235
employment trends, 236
job prospects, 236, *236*
licensure, 235–236
other qualifications, 236
professional profiles, 234
related occupations, 237
training, 235
work description, 233–235
work environment, 235
Supreme court
decisions and changes to ACA, 55–57
Hobby Lobby v. Burwell, 56
King v. Burwell, 57
National Federation of Independent business v. Sebelius, 56
surgeons, 140
advancement, 107
demand for, 107
earnings, 107–108
employment opportunities, 106, *106*
employment trends, 107
perceptions about, 102
work description, 104
work environment, 105–108
surgery, PAs and, 114
Surgical Assistant Certified (SA-C), 310
surgical robot, 66
surgical technologists, 308
additional information, 311
advancement, 310
certification and other qualifications, 309–310
earnings, 310, *310*
education, 309–310
employment change, 310
employment opportunities, 309
employment trends, 310
job prospects, 310, *310*
related occupations, 311
training, 309
work descriptions, 309
work environment, 309
Swallowing and Swallowing Disorders (BCS-S), 187
symptoms and response, 348

T

targeted format, résumé, 421
Targeted therapies, 66
teaching certificate or license, 220
Tech in Surgery-Certified (TS-C), 310
technical occupations, 76
technical skills, 90
technology, 4; *See also* medical technology
costs and, 4, 7
growth of, 7
healthcare financing and, 30
innovations, 65–67
mobile, 70
noninvasive, 302–303
services impact of, 7–8
vascular, 303
telemedicine, 65, 116
telepractice, 186
Test of English as a Foreign Language (TOEFL) exam, 166
Test of Spoken English (TSE) exam, 166
tests and measurements, 196
therapeutic exercises, 196
Therapeutic Recreation (TR) services, 337; *See also* recreational therapists
third-party reimbursement, 222
3D printing, 66–67
tinnitus, 184
TOEFL exam. *See* Test of English as a Foreign Language exam
trade groups, as career information source, 416
Traditional Chinese Medicine, 334; *See also* massage therapy
training; *See also* education
animal care and service workers, 394–395
APRNs, 130
athletic trainers, 220
audiologists, 190
cardiovascular technologists and technicians, 304
CHWs, 263
clinical laboratory scientists and technicians, 326–327
dental assistants, 145–146
dental hygienists, 143
dental laboratory technicians, 148
dentists, 139
diagnostic medical sonographers, 300
dietitians, 154–156
dispensing opticians, 178
DO and MD, 106
EMT-paramedics, 284–285
environmental science and protection technicians, 409–410
environmental scientists and specialists, 407
exercise physiologists, 223
genetic counselors, 254
health educators, 260
health services managers, 276–277
home health aides, 375
LPN/LVN, 133
massage therapists, 336
MD and DO, 106
medical assistants, 366
nuclear medicine technologists, 307
nursing assistants and orderlies, 369
occupational health and safety specialists, 401
occupational health and safety technicians, 404
occupational therapists, 211
occupational therapy assistants and aides, 214
O&M specialists, 265
ophthalmic laboratory technicians, 180–181
optometrists, 175
orthotics and prosthetics (O&P), 204
PA, 115–116
personal care aides, 378
pharmacists, 165–166
pharmacy technicians and aides, 168–169
phlebotomists, 329
physical therapist assistants and aides, 201
physical therapists, 198
podiatrists, 109
psychiatric technicians and aides, 380
psychologists, 230–231
radiation therapists, 294
respiratory therapists, 316–317
RNs, 124
RTs, 339
school health educators, 262
social and human service assistants, 247
social workers, 242–243
speech-language pathologists, 187
substance abuse and behavioral disorder counselors, 235
surgical technologists, 309
veterinarians, 388–389
veterinary technologists and technicians, 391–392
VRTs, 267
Training Manual and Supplements, 420
transesophageal echocardiography, 303
translators, 78
transmissible diseases, 387
transplant nurse, *122*
trauma centers, 282
treatment, 12, 13
TRICARE, 12, 16
TSE. *See* Test of Spoken English exam
tuberculosis, 4

U

ultrasound machines, 298
uncompensated care, 58
United Sates Medical Licensing Examination (USMLE), 106
universities, selection of, 83–84
U.S. Administration on Aging (AOA), 44
U.S. Army, Navy, Air Force, and Veterans Administration, 82
U.S. Census Bureau, 38

U.S. Department of Agriculture (USDA), 82, 152, 387, 388, 389
U.S. Department of Defense (DoD), 12, 16, 152
U.S. Department of Health and Human Services (HHS), 12, 13, 83
career opportunities and, 20
divisions of, 19
functions, 19
healthcare reform and, 52–53
historical highlights, 21–22
overview of, 18–19
public health services and, 18–22
U.S. Department of Labor, 205, 236, 331, 334, 358, 375, 378, 416, 420
online sources from, 418
U.S. Department of Veteran Aff airs (VA), 152, 222
U.S. Equal Employment Opportunity Commission (EEOC), 418
U.S. Food and Drug Administration (FDA), 56, 82, 96, 165, 387, 388
U.S. Office of Personnel Management, 419
U.S. Public Health Service (PHS), 12, 18, 165, 406
functions of, 19–20
USAJobs, 411
USMLE. *See* United Sates Medical Licensing Examination

V

vaccination, 5
vascular technology, 303
VCAT. *See* Veterinary College Admission Test
vendor-neutral archive (VNA), 69
venipuncture, 329
ventilators, 315
vertigo, 184
veterans, career sources for, 419
Veterans Administration (VA), 12, 16, 165, 204, 265
veterinarians, 140
additional information, 396–397
advancement, 389
certification and other qualifications, 389
companion animal, 387
earnings, 390
education, 388–389
employment change, 389–390
employment opportunities, 388
employment trends, 389
equine, 387
food safety and inspection, 387
job prospects, 390, *390*
licensure, 389
livestock/large animal, 387
related occupations, 390
research, 387
training, 388–389
work description, 387–388
work environment, 388
Veterinary College Admission Test (VCAT), 388
Veterinary Medical College Application Service (VMCAS), 388
veterinary medicine, 386
Veterinary Technician National Examination (VTNE), 392, 397
veterinary technologists and technicians
additional information, 396–397
advancement, 392
certification and other requirements, 392
earnings, 393
education, 391–392
employment change, 392
employment opportunities, 391
employment trends, 392
job prospects, 392, *393*
licensure, 392
related occupations, 393
training, 391–392
work description, 390–391
work environment, 391
Vets.gov, 419
videos, career planning and, 85
viral gastroenteritis, 5
vision therapy, 174
visually impaired; *See* orientation and mobility specialists; visual rehabilitation therapists
visual rehabilitation therapists (VRTs), 258
additional information, 270
advancement, 267
certification and other qualifications, 267
earnings, 267
education, 267
employment opportunities, 267
job prospects, 267
licensure, 267
professional profiles, 268
related occupations, 267
training, 267
work description, 266–267
work environment, 267
vital statistics, 20, 70
VMCAS. *See* Veterinary Medical College Application Service
VNA. *See* vendor-neutral archive
voluntary health agencies, 82
voluntary hospital, 15
volunteer EMTs, 284
VRTs. *See* visual rehabilitation therapists
VTNE. *See* Veterinary Technician National Examination
vulnerable populations, 241

W

wage and price controls, 29; *See also* earnings
wage-and-salary physicians, 105, 107–108
Walter Reed National Military Medical Center, Bethesda, 16
wax carvers, 147
wax model of tooth, 147
wax spatulas, 147
wearable technology, 70
wellness and health promotion, 208–209
WHO. *See* World Health Organization
women, career sources for, 419
Women, Infants, and Children (WIC) dietitians, 153
work description
animal care and service workers, 393–394
APRNs, 127–129
athletic trainers, 218–219
audiologists, 188–189
cardiovascular technologists and technicians, 302–303
CHWs, 262–263
clinical laboratory scientists and technicians, 324–326
dental assistants, 144–145
dental hygienists, 141–143
dental laboratory technicians, 147–148
dentists, 138
diagnostic medical sonographers, 298–300
dietitians, 152–154
dispensing opticians, 177
EMT-paramedics, 282–283
environmental science and protection technicians, 408–409
environmental scientists and specialists, 405–406
exercise physiologists, 223
genetic counselors, 252–253
health educators, 258–260
health information administrators, 349–350
health information technician, 354
health services managers, 274–276
home health aides, 374
LPN/LVN, 132
massage therapists, 335
MD and DO, 103–104
medical assistants, 364
medical librarians, 359
medical transcriptionists, 356–357
nuclear medicine technologists, 306
nursing assistants and orderlies, 368–369
occupational health and safety specialists, 400
occupational health and safety technicians, 402–403

occupational therapists, 208–209
occupational therapy assistants and aides, 213
O&M specialists, 264–265
ophthalmic laboratory technicians, 180
optometrists, 174
orthotics and prosthetics (O&P), 203
PA, 114
personal care aides, 377
pharmacists, 164–165
pharmacy technicians and aides, 168
phlebotomists, 329
physical therapist assistants and aides, 200
physical therapists, 196–198
podiatrists, 108–109
psychiatric technicians and aides, 379
psychologists, 228–230
radiation therapists, 291–293
respiratory therapists, 314–315
respiratory therapy technicians, 318
RNs, 121–123, *122*
RTs, 337–338
school health educators, 261–262
social and human service assistants, 245–246
social workers, 240–242
speech-language pathologists, 185–186
substance abuse and behavioral disorder counselors, 233–235
surgeons, 104
surgical technologists, 309
veterinarians, 387–388
veterinary technologists and technicians, 390–391
VRTs, 266–267
work environment
anesthesiologists, 105
animal care and service workers, 394
APRNs, 129
athletic trainers, 219
audiologists, 189
cardiovascular technologists and technicians, 303–304
CHWs, 263
clinical laboratory scientists and technicians, 326
dental assistants, 145
dental hygienists, 143
dental laboratory technicians, 148
dentists, 138
diagnostic medical sonographers, 300
dietitians, 154
dispensing opticians, 178
EMT-paramedics, 284
environmental science and protection technicians, 409
environmental scientists and specialists, 406
exercise physiologists, 223
genetic counselors, 253
health educators, 260
health information administrators, 353
health information technician, 354
health services managers, 276
home health aides, 375
massage therapists, 335
MD and DO, 105–108
medical assistants, 366
medical librarians, 360
medical transcriptionists, 357
nuclear medicine technologists, 306
nursing assistants and orderlies, 369
occupational health and safety specialists, 400–401
occupational health and safety technicians, 403
occupational therapists, 209
occupational therapy assistants and aides, 213
O&M specialists, 265
ophthalmic laboratory technicians, 180
optometrists, 174
orthotics and prosthetics (O&P), 204
PA, 114
personal care aides, 377
pharmacists, 165
pharmacy technicians and aides, 168
phlebotomists, 329
physical therapist assistants and aides, 200
physical therapists, 198
podiatrists, 109
psychiatric technicians and aides, 380
psychologists, 230
radiation therapists, 293–294
respiratory therapists, 316
respiratory therapy technicians, 318
RNs, 123
RTs, 338
school health educators, 262
social and human service assistants, 246
social workers, 242
speech-language pathologists, 186
substance abuse and behavioral disorder counselors, 235
surgical technologists, 309
veterinarians, 388
veterinary technologists and technicians, 391
VRTs, 267
Workers' Compensation, 29
work-related injuries, 222
World Health Organization (WHO), 4, 6
writing skills, 92, 211

X

X-rays, 288, 298