THE SOCIOLOGY OF HEALTH, HEALING, AND ILLNESS

Gregory L. Weiss and Denise A. Copelton

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ROUTLEDGE

TENTH EDITION

The Sociology of Health, Healing, and Illness

With thorough coverage of inequality in health care access and practice, this leading textbook has been widely acclaimed by teachers as the most accessible of any available. It introduces and integrates recent research in medical sociology and emphasizes the importance of race, class, gender, and sexuality throughout.

This new edition leads students through the complexities of the evolving Affordable Care Act. It significantly expands coverage of medical technology, end-of-life issues, and alternative and complementary health care—topics that students typically debate in the classroom. While the COVID-19 pandemic emerged after this edition of the text was originally submitted, material has been added in Chapters 3, 10, and 13 about it. Many new text boxes and enhancements in pedagogy grace this new edition, which is essential in the fast-changing area of health care.

New to this edition:

- More text boxes relating the social aspects of medicine to students' lives.
- Expanded coverage leading students through the complex impacts of the ACA and health care reform.
- Greater emphasis on sexual minority health and LGBTQ+ persons' experiences in the health care system.
- Expanded coverage of medical technology, end-of-life issues, and alternative and complementary health care.
- "Health and the Internet" sections are updated and renovated to create more interactive student assignments.
- New end-of-chapter lists of terms, with key terms as flash cards on the companion website.
- An updated instructor's guide with test bank.

Gregory L. Weiss earned his PhD from Purdue University and is now Professor Emeritus of Sociology at Roanoke College. During his career, he has been an honored teacher (winning numerous college, statewide, regional (SSS), and national (ASA's Section on Teaching and Learning)) awards, a dedicated researcher and writer (author of *Grass Roots Medicine* and co-author of *Experiencing Social Research* and the ASA publication on *Creating an Effective Sociology Assessment Program* as well as dozens of scholarly articles), and active in the community in a variety of health- and animal-related organizations.

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To Janet

To Brian, Mathilda and Margaret

To all of the health care professionals who have given so much of themselves to provide care to patients during the COVID-19 pandemic.

With much appreciation to former co-author, Lynne Lonnquist.


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Preface

The tenth edition of this textbook has been updated to reflect the very important changes that have occurred in the US health care system in the last 3 years and in matters related to the sociology of health, healing, and illness. It reflects medical sociology's commitment to analyzing patterns of disease and illness, health- and illness-related behaviors, health care workers, and the health care system.

In preparing this tenth edition, we have sought to retain and strengthen the emphases and features of the earlier editions, to thoroughly update patterns, trends, and statistics, and to present new material that reflects important changes in health care in society and important advancements in medical sociology. As an illustration, although the COVID-19 pandemic emerged after this edition of the text was already submitted, we later added material in Chapters 3, 10, and 13 about the pandemic.

KEY EMPHASES WITHIN THE TEXT

This edition of the text maintains the same five emphases as the earlier editions. *First, we provide broad coverage of the traditional subject matter of medical sociology and include both new perspectives and research findings on this material.* The core areas of medical sociology (the influence of the social environment on health and illness, health and illness behavior, health care practitioners and their relationships to patients, and the health care system) all receive significant attention within the text. Naturally, statistics throughout the text have been updated to provide timely analysis of patterns and trends. Recent research findings and theoretical insights have been incorporated in every chapter. Attention devoted to relatively new areas in the field has not reduced coverage of traditional areas such as social stress, illness behavior, and the physician–patient relationship.

Second, we have continued to emphasize emerging areas of analysis in medical sociology and recent work within the field. Recent health care reform efforts in both the public and private domains continue to have dramatic effects on almost every aspect of health care. We describe these effects throughout the text.

We also continue to incorporate key medical ethics issues throughout the text. These issues represent some of the most important health-related debates occurring in the United States today, and many medical sociologists have acknowledged the importance of understanding these policy debates and setting them within a sociological context. We have attempted to provide balanced and comprehensive coverage of several of these issues (especially in Chapters 13 and 16 and in the discussion questions and cases at the ends of chapters).

We work hard to keep this book as up to date as possible and to reflect the most recent developments related to health, healing, and illness. For example, this tenth edition provides extended analysis of a wide range of topics, including the following:

- Introduction of key new concepts, including
  - Pregnancy-related mortality ratio
  - Health social movements
  - Competency-based standards in medical education
  - The glass escalator
  - High-deductible health plans
  - Value-based care.
- Addition of new "In the Field" boxes, including
  - The COVID-19 pandemic
  - Coping methods of college students
  - Perceived discrimination as a stressor

  - Oath-taking in medical schools
  - The business side of egg freezing.
- Introduction to new topics, including
  - *Healthy People 2030*
  - The recent measles outbreak and anti-vaccination efforts
  - Changes in the physician's workplace
  - The American Hospital Association's "Value Initiative"
  - Medical care in the Central African Republic, sometimes identified as the world's unhealthiest country.
- Increased coverage of many topics, including
  - E-cigarettes
  - Medical marijuana and CBD oil
  - Self-help initiatives
  - Sexual harassment in medicine
  - Physician impairment
  - Medical school curricular reform
  - Patient-centered care
  - Changes in medical practice
  - The HPV vaccination controversy
  - The opioid crisis, including its negative impact on life expectancy and mortality
  - International physicians
  - Nurse demographics
  - The nursing shortage and efforts to recruit men into nursing
  - Nursing burnout
  - Disease and illness in developing countries
  - Developments related to palliative care
  - Recent developments in the health care systems of Canada, China, and the United Kingdom, and increased attention to European models for health insurance
- Thorough coverage of The Patient Protection and Affordable Care Act, including its successes and failures and continuing efforts both to dismantle it and to extend it.

Third, the extensive coverage of gender, race, and class issues as they relate to health, healing, and illness has been enlarged in several chapters and significant coverage is now given to sexual minorities, including transgender issues. We want students to constantly be exposed to the important influence of these factors and others on matters related to health and illness. The chapters on social epidemiology, social stress, health and illness behaviors, nursing, the profession of medicine and medical education, and the physician–patient relationship all give special emphasis to these matters.

Fourth, we continue to emphasize key social policy questions. Timely questions and issues addressed include

- Performing regular, routine HIV checks
- Providing clean needles to people using injectable drugs
- Taxing sugary food and beverages
- Mandating HPV and measles vaccinations
- Public financing of free medical education
- Recruiting physicians, nurses, and other health care workers from developing countries
- Striking by medical providers
- Permitting religious exemption laws
- Legalizing medical marijuana
- Allowing further consolidation and merger of American hospitals
- Maximizing use of expensive advanced health care technologies
- Considering new organ donation policies in Singapore and Israel.

Fifth, we have attempted to prepare a text that is informative. We want readers to become aware of the many contributions of medical sociology to understandings of health, healing, and illness, and to become intrigued by the provocative issues and debates that exist in medical sociology and in the health care field. We also want readers to find this book readable and interesting.

Both of us have enjoyed structuring our classrooms to enable as much reflection, critical thinking, and student participation as possible. We have found that there is simply not time for some of the classroom activities that we most enjoy (e.g., reading and then discussing a

provocative paperback, watching a good documentary and critically analyzing it together, or using student panels to introduce issues) if we feel obligated to lecture on all the material in each chapter. On the other hand, we do want students to become familiar with the important contributions of the field. When we use this book, we spend some time lecturing on parts of it, adding to certain discussions and presenting some of the material in an alternative manner. However, our students are able to grasp much of the book on their own, enabling us to supplement and create additional types of learning experiences. The available instructor's guide provides further information on how we have combined successfully the chapter material with lectures, videos, and discussions.

What are the key pedagogical features of this text?

- Clear organization within chapters and a clear writing style
- "In the Field" boxed inserts that provide illustrations of key points made in the chapters
- "In Comparative Focus" boxed inserts that examine a selected health topic or issue in another country or countries
- Meaningful tables and charts with the most recent data available at the time of writing this edition of the book
- Illustrative photographs, many of which were taken specifically for use in this book
- Chapter summaries
- End-of-chapter "Health on the Internet" references and questions
- End-of-chapter "Discussion Cases"
- End-of-chapter "Glossary" sections
- References conveniently provided at the end of each chapter
- A glossary is available as an e-Resource at www.routledge.com/9780367253882.

Three additional facets of the book are important to us and help to describe its place within the field. *First, we consider one of the strengths of the book to be the large number of research studies cited to illustrate key points*. We do this to demonstrate to students the empirical basis of sociology, the origin of sociological knowledge, and the fascinating types of research conducted in medical sociology. We hope it inspires students to consider interesting research projects.

We have worked hard to identify theoretically meaningful and methodologically sound studies that contribute important knowledge to our understanding of health, healing, and illness. While making heavy use of research conducted by medical sociologists, we also include appropriate material from other social sciences, from the government, and from the medical professional literature. We believe that this is helpful in forming the most comprehensive understanding of the topics covered in the book.

A second facet of our book that is important to us is that we provide balanced coverage on key issues. This does not mean that our book lacks critical perspective or analysis. In fact, readers will find no shortage of critical questions being asked. However, our objective is to expose students to arguments on both sides of the issues, and to challenge them to consider the soundness of reasoning and quality of evidence that are offered.

Finally, we hope that this text reflects a genuine understanding of some very important and complex issues. Both of us have had many opportunities to experience various dimensions of the health care system. Between the two of us, we have been able to apply and extend our medical sociological training through work in a free health clinic, in a family planning clinic, in self-help groups, in hospital bioethics groups, on the human rights committee of a state psychiatric hospital, on the Navajo reservation, and in voluntary health agencies. Although we have not substituted our personal experiences for more general understandings developed through sound theory and research, we believe that our experiences have helped us to develop a better understanding of

certain issues and assisted us in being able to illustrate important concepts and patterns.

Ultimately, our hopes for student-readers remain the same as with the earlier editions—that they gain an appreciation of how the sociological perspective and social theory contribute to an understanding of health, healing, and illness, and of the manner in which social research is used to study these processes. In addition, we hope that readers perceive some of the many wonderfully exciting issues that are studied by medical sociologists.

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CHAPTER 1

A Brief Introduction to the Sociology of Health, Healing, and Illness

Learning Objectives

- Identify and explain the major historical factors that led to the development of medical sociology as a subfield of sociology.
- Identify and give specific examples of the four major categories of focus within medical sociology.
- Explain how the sociological perspective, sociological theory, and social research methods can be applied to the study of health, healing, and illness.
- Discuss the orientation of medical sociologists to their research in this early part of the twenty-first century.

Until the second half of the twentieth century, matters pertaining to health, healing, and illness were viewed as the primary domain of physicians, other health care practitioners, and scholars in biology and chemistry. Neither medicine nor sociology paid much attention to each other. This changed dramatically in the ensuing decades as the paths of sociology and medicine increasingly converged. This chapter presents a brief introduction to the sociology of health, healing, and illness—a subfield of sociology commonly referred to as medical sociology.

DEFINITION OF MEDICAL SOCIOLOGY

Ruderman (1981:927) defines **medical sociology** as "the study of health care as it is institutionalized in a society, and of health, or illness, and its relationship to social factors." The Committee on Certification in Medical Sociology (1986:1) of the American Sociological Association (ASA) provided the following elaboration:

> Medical sociology is the subfield which applies the perspectives, conceptualizations, theories, and methodologies of sociology to phenomena having to do with human health and disease. As a specialization, medical sociology encompasses a body of knowledge which places health and disease in a social, cultural, and behavioral context. Included within its subject matter are descriptions and explanations or theories relating to the distribution of diseases among various population groups; the behaviors or actions taken by individuals to maintain, enhance, or restore health or cope with illness, disease, or disability; people's attitudes and beliefs about health, disease, disability and medical care providers and organizations; medical occupations or professions and the organization, financing, and delivery of medical care services; medicine as a social institution and its relationship to other social institutions; cultural values and societal responses

with respect to health, illness, and disability; and the role of social factors in the etiology of disease, especially functional and emotion-related.

Clearly, the focus of medical sociology is broader than just "medicine." In fact, the title of this book was intentionally selected to connote that medical sociology includes a focus on health (in the positive sense of social, psychological, and emotional wellness), healing (the personal and institutional responses to perceived disease and illness), and illness (as an interference with health).

Sociologists study health, healing, and illness because they are a central part of the human experience, because they help us understand how society works, because they reflect patterns of social relationships, and because these understandings can contribute to helping address problems in the health care field. Sociologists emphasize that explanations for health and illness and for healing practices must go beyond biological and individualistic factors by examining the important influence of social context.

HISTORICAL DEVELOPMENT OF MEDICAL SOCIOLOGY

Setting the Foundation: The Importance of Social Factors in Health and Illness

It is difficult to identify any single event as the "starting point" of the field of medical sociology. Some of the basic insights of the field were even present among society's earliest philosophers and physicians. Many physicians in ancient times perceived an essential interrelationship among social and economic conditions, lifestyle, and health and illness. This understanding has been an integral part of medical thinking in some (though not all) civilizations ever since.

Often cited as a key historical figure who paved the way for medical sociology is Rudolf Virchow, the great mid-nineteenth-century German physician (and the founder of modern pathology). Virchow identified social and economic conditions as primary causes of an epidemic of typhus fever in 1847, and he lobbied for improved living conditions for the poor as a primary preventive technique. He argued against biomedical reductionism—attempting to reduce every disease and illness to a biological cause—and contended that medicine is largely a social science that needs to consider the influence of social context on health and illness.

The Turn of the Century: Development of Social Medicine

The late nineteenth century and the early twentieth century were a period of heightened awareness of the need for social programs to respond to health crises. These were years of social upheaval caused in part by the effects of the Industrial Revolution and rapid urban growth (and, in the United States, a tremendous influx of largely poor and unskilled immigrants). In 1915, Alfred Grotjahn published a classic work, *Soziale Pathologie*, documenting the role of social factors in disease and illness and urging development of a social science framework for reducing health problems. The term **social medicine** was coined to refer to efforts to improve public health.

However, an important crosscurrent was occurring simultaneously. The development of the germ theory of disease enabled physicians to treat more successfully the acute infectious diseases that plagued society. This reinforced a belief that medicine could rely solely on biological science. The discipline of sociology was still in its infancy and unable to provide sufficient documentation of the need for a complementary focus on social conditions.

The Early to Mid-twentieth Century: More Studies on Health and Medicine

Several important precursors to medical sociology occurred in the first half of the twentieth

century. Social surveys became an important research technique, and many focused on health and living conditions. Sociologists often worked with charity organizations and settlement houses, which also became subjects for study. By the 1930s and 1940s, many sociological studies of the medical field appeared, including Talcott Parsons's 1939 work on the medical professions. Political scientist Oliver Garceau (1941) contributed to the political sociology of medicine by analyzing the political life of the American Medical Association. George Rosen (1944) studied increasing specialization in medicine. Oswald Hall (1946) studied the informal organization of medical practice in an American city (Rosen, 1976).

The 1950s and 1960s: The Formal Subdiscipline Emerges

The formal emergence of medical sociology as a field of study occurred in the 1950s and 1960s. The most important stimuli were changes in health, healing, and illness, external recognition of the field, and its institutionalization within sociology.

Changes in Health, Healing, and Illness. Based on analysis by Rodney Coe (1970) and others, the development of medical sociology was facilitated by four changes that occurred or were occurring in medicine in the 1950s and 1960s:

1. *Changing patterns of disease and illness.* During this time, the primary causes of disease and illness shifted from acute infectious diseases (e.g., influenza and tuberculosis) to chronic, degenerative diseases (e.g., heart disease and cancer). Because the factors that lead to degenerative diseases are more obviously tied to social patterns and lifestyle, the necessity for sociological contributions became more apparent.
2. *The impact of preventive medicine and public health*. The focus in public health was shifting from germs and immunology to the social conditions such as poverty and poor housing that underlie many diseases and illnesses.
3. *The impact of modern psychiatry*. The development of the field of psychiatry led to increased interest in the psychosociological basis for many diseases and illnesses and in the importance of effective interaction between patients and practitioners.
4. *The impact of administrative medicine*. Medical organizations such as hospitals and health insurance companies were becoming increasingly complex, creating greater need for researchers with organizational expertise.

External Recognition and Legitimation. Two key events during the 1950s and 1960s contributed to the increased interest in and legitimation of medical sociology. First, medical schools began to hire more sociologists. Although medical sociology was not always well integrated into the curriculum, the move symbolized an increasing recognition of sociology's potential contribution to understanding disease and illness. Second, government agencies and private foundations initiated significant financial funding for medical sociology. The National Institutes of Health and the National Institute of Mental Health sponsored sociological research in medicine and subsidized training programs for graduate students in sociology. The Russell Sage Foundation provided significant funding of programs to increase the use of social science research within medicine.

Institutionalization of Medical Sociology. Two additional events contributed to the institutionalization of medical sociology. In 1959, medical sociology was accepted as a formal section of the ASA—an important step in bringing recognition to the field and enabling recruitment of new members. Second, in 1965, the ASA assumed control of an existing journal in medical sociology and renamed it the *Journal of Health and Social Behavior*. Now the official ASA journal

for medical sociology, it is a key mechanism for medical sociologists to share their research.

Since then, the field has flourished. The ASA section on medical sociology currently has approximately 1,000 members (there are more than 13,000 ASA members), and is the third largest (of 52) interest sections within the association. Medical sociologists publish in a wide variety of journals in sociology, public health, and medicine and are increasingly employed in health planning, community health education, education of health professionals, government at all levels, and health care administration in addition to colleges and universities. See the "In the Field" box on Major Topics in Medical Sociology for one way of organizing the field's major topics.

IN THE FIELD

MAJOR TOPICS IN MEDICAL SOCIOLOGY

The four major categories of interest in medical sociology with specific topics of analysis and sample research questions (that will be answered in the appropriate chapters) are as follows:

Category #1: The Relationship Between the Social Environment and Health and Illness

Social Epidemiology—the study of patterns and trends in the causes and distribution of disease and illness within a population. Research question: Why is the infant mortality rate in the United States higher for African Americans than for whites?

Social Stress—the study of the imbalance or unease created when demands on a person exceed resources to deal with them. Research question: Why do women report higher levels of stress?

Category #2: Health and Illness Behavior

Health Behavior—the study of behaviors intended to promote positive health. Research question: Why does society focus on changing individual behaviors rather than the social circumstances that influence individual behaviors?

Experiencing Illness and Disability—the study of the ways that people perceive, interpret, and act in response to illness and disability. Research question: What factors cause people to interpret medical symptoms in very different ways?

Category #3: Health Care Practitioners and Their Relationship With Patients

Physicians and the Profession of Medicine—the study of medicine as a profession and the role of medicine within society. Research question: How does the high number of medical malpractice suits influence physicians and the practice of medicine?

Medical Education and the Socialization of Health Providers—the study of the education and socialization of physicians in medical school. Research question: What are the key value orientations that students learn in medical school?

Nurses, Advanced Practice Practitioners, and Allied Health Workers—the study of issues pertaining to non-physician health care providers. Research question: Why are physicians more supportive of physician assistants than they are of nurse practitioners?

Complementary and Alternative Healing Practices—the study of healers and healing practices outside conventional medicine. Research question: Why do many people simultaneously use both medical doctors and alternative healers?

The Physician–Patient Relationship—the study of patterns in how physicians and patients relate to each other and the factors that influence these patterns. Research question: To what extent do men and women physicians interact differently with patients?

Category #4: The Health Care System

The Health Care System—the study of the organization, regulation, financing, and important problems in the health care system and efforts to enact change. Research question: What effect is health care reform having on the health care system?

Health Care Delivery—the study of the many kinds of organizations that provide health care services. Research question: What are the causes and consequences of the increasing use of retail store clinics for primary care?

The Social Effects of Health Care Technology—the study of the social consequences and public policy choices of new health care technologies. Research question: What effects does legalizing physician-assisted death have on the dying experience?

Comparative Health Care Systems—the study of health care systems in other countries. Research question: What facets of health care are emphasized in countries around the world?

Foundational and Emerging Areas of Interest

All fields of inquiry are built on certain foundational topics yet remain open to new and emerging areas of interest. Within medical sociology, four particular topics are of rapidly expanding interest.

Issues Related to Health Care Reform. Concerns about the high cost of health care and the lack of or inadequate access that millions of Americans have to quality health care has led to recent reform efforts in the United States. A massive shift in the structure of insurance plans occurred in the 1990s and early 2000s, and major health care reform legislation (the Patient Protection and Affordable Care Act—commonly known as Obamacare) was passed in 2010. Hankin and Wright (2010:S10), in an editorial entitled "Reflections on Fifty Years of Medical Sociology" in the *Journal of Health and Social Behavior*, state:

> The work for medical sociologists is just beginning as we enter a new era of health care reform. Not only can we offer insights about how to implement reform, but we can also examine the intended and unintended consequences of transforming the health care system and the extent to which these structural changes actually improve population health.

These changes have had tremendous effects on the health care system and are examined throughout this book.

Issues Related to Technological Advancements in Medicine. Rapid advancements in medical technologies have dramatically changed the practice of medicine and how we conceptualize the human body. Medical sociologists are examining these technologies and their effects on the delivery of health care, the financing and regulation of health care, the provision of information to patients, the sharing of information among patients, and the reform of the health care system.

> Across the half-century lifespan of the (ASA) Medical Sociology Section, during which sweeping changes have impacted American society as a whole, technologies have changed dramatically, too, from large "machines at the bedside" to tiny pills and devices that enter into and transform human bodies, and information technologies that have altered if not restructured health care provision.
>
> (Casper and Morrison, 2010:S121)

We examine many of these technologies in this text, from life-saving technologies to the significant development of use of social media by health care providers and patients.

Issues Related to Medical Ethics. Many technological advancements in medicine have raised important and provocative ethical questions. Sociological analysis and insights are extremely important in genuinely understanding these matters (DeVries et al., 2007). In recent years, medical sociologists have become more active in studying (1) values, attitudes, and behaviors of people relative to ethical issues in medicine (e.g., attitudes about genetic research and human cloning) and how they are influenced by various social factors, (2) social policy questions (e.g., on new reproductive technologies or the termination of treatment for the terminally ill), and (3) social movements (e.g., the pro-life and pro-choice movements) that have developed around these ethical issues. DeVries and Subedi (1998:xiii) describe sociology's role as "lifting bioethics out of its clinical setting, examining the way it defines and solves ethical problems, the modes of reasoning it employs, and its influence on medical practice."

Issues Related to Globalization. Increasing globalization with respect to health and medicine is apparent in several ways. For example, climate change is affecting conditions that relate to health and disease all over the world. Recent disease epidemics—such as COVID-19, Ebola, and SARS—demonstrate the worldwide spread of disease. As the provision of health care becomes more and more expensive, countries around the world find it increasingly difficult to sustain an adequate health care system and seek to learn from each other. Medical schools increasingly have formal relationships with health institutions in other countries. Several chapters in this book describe the increasing attention given by medical sociology to global health care issues.

SOCIOLOGY'S CONTRIBUTION TO UNDERSTANDING HEALTH, HEALING, AND ILLNESS

Sociology is "the scientific study of social life, social change, and the social causes and consequences of human behavior" (American Sociological Association, 2013:1). It is the discipline with primary responsibility for studying social interaction among people, groups and organizations, and social institutions, and examining how these interactions influence and are influenced by the larger culture and social structure of society.

Three particular aspects of sociology contribute in important ways to understanding health, healing, and illness: (1) the sociological perspective, (2) the construction of social theories to explain why things happen as they do, and (3) the scientific foundation of the discipline.

The Sociological Perspective

Sociology is one of many perspectives used to acquire knowledge about the world. History, biology, chemistry, anthropology, psychology, economics, political science, philosophy and religion, clinical medicine, and other disciplines all contribute to our understanding of the medical field. Sociology's primary focus is to understand social interaction, groups and organizations, and how social context and the social environment influence attitudes, behaviors, and social organization.

The **sociological perspective** requires an ability to think about things in a manner other than that to which many individuals are accustomed. Often we think very individualistically about human behavior. If a particular teenager begins smoking cigarettes, or a particular man is very reluctant to see a physician when ill, or a particular medical resident feels abused by superiors, we may attempt to understand the behavior by focusing on the particular individual or the particular situation. However, sociology attempts to understand these behaviors by placing them

C. Wright Mills (1916–1962) coined the term "sociological imagination" to refer to the ability to see how individuals' *personal* troubles are influenced by large-scale, social (public) issues.

Source: © Archive Photos/Getty Images.

in social context—that is, by looking for social patterns and examining the influence of social forces or circumstances that have an impact on individual behavior.

C. Wright Mills, an enormously influential sociologist, referred to this ability to see how larger social patterns (public issues) influence individual behavior (personal troubles) as the **sociological imagination** (Mills, 1959). Consider the following:

1. Almost all adult smokers began smoking as teenagers; few adults begin smoking.
2. Men are more reluctant than women to see a physician.
3. Pharmaceutical drugs are more expensive in the United States than in any other country.

Sociologists attempt to understand these very important social patterns by placing them in social context. It is not just one adult smoker who started as a teen—that is the common pattern. So we try to find the social forces and the social arrangements that make it common for teens but not for adults to initiate smoking.

It is not just one man who is more reluctant than one woman to see a physician. If it was, there might be an individual explanation. Instead, men in general show more reluctance than women in general, so we are talking about some social force that influences men and women differently. What is it that creates this greater physician-aversion for men?

Finally, it is not just one drug that is more expensive in the United States than in other countries. If it was, there might be something in particular about that drug. In fact, almost all drugs in the United States are more expensive—many are much, much more expensive—so there must be some larger explanation. This is what Mills meant when he said that sociologists try to identify and explain the "public issues" (the larger social forces) that lead to "personal troubles."

The Construction of Social Theories

Sociologists attempt to describe social patterns and then find cause-and-effect relationships that explain them. In *Invitation to Sociology* (1963), Peter Berger describes sociology as searching for the general in the particular—attempting to determine how particular facts or individual behaviors may generate and reflect social patterns.

> All science, natural and social, assumes that there is some underlying order in the universe. Events, whether they involve molecules or human beings, are not haphazard. They follow a pattern that is sufficiently regular for us to be able to make generalizations—statements that apply not just to a

> specific case but to most cases of the same type. . . . Generalizations are crucial to science because they place isolated, seemingly meaningless events in patterns we can understand. It then becomes possible to analyze relationships of cause and effect and thus to explain why something happens and to predict that it will happen again under the same conditions in the future.
>
> (Robertson, 1987:6)

Grand Theoretical Orientations in Sociology. Three grand (meaning all-encompassing) theoretical orientations have dominated the field of sociology. These orientations are fundamental images of society that guide sociological thinking. They are all-encompassing in that they offer a perspective to unify all observed uniformities in social behavior or social organization.

Functionalism (or structural functionalism) views society as a system (a structure) with interdependent parts (e.g., the family, the economy, and medicine) that work together to produce relative stability. Each of these parts is assumed to have positive consequences (or functions) and may have negative consequences (or dysfunctions) for the society as a whole. When each part operates properly, a stable and relatively harmonious society exists.

Given this image of society, functionalists are adept at identifying the effective integration of societal parts. For example, functionalists might identify the manner in which the value that America places on science and discovery has led to significant advancements in medical knowledge and to the development of new forms of medical technology.

Conflict theory views society as a system largely dominated by social inequality and social conflict. Societies are viewed as being in a constant state of change, characterized by disagreements over goals and values, competition among groups with unequal amounts of power, and hostility. Conflict theorists perceive whatever societal order exists to be dictated by the most powerful groups rather than being based on the value consensus envisioned by functionalists.

Given this image of society, conflict theorists are skillful at utilizing a critical perspective and identifying social inequities. In this regard, medical sociologists have an opportunity to comment critically on perceived problems and inequities in the health care system and to offer a critical perspective on the functioning of the system. For example, conflict theorists point out that a primary reason why many low-income women deliver premature, low-birth-weight babies is their inability to access adequate prenatal care.

While functionalism and conflict theory view society from a macro perspective (examining society as a whole), **interactionism** (or symbolic interactionism) focuses on small-scale, day-to-day interactions among people. Interactionists view society as the ultimate outcome of an infinite number of interpersonal interactions in which individuals interpret social messages and base their responses on these interpretations.

In medicine, interactionists have shown how physicians sometimes utilize particular communication strategies (e.g., using brief, closed-ended questions and interrupting patient comments) to reinforce dominance and bolster role distance.

Mid-Range Theoretical Orientations in Sociology. While the previously mentioned grand theories are all-encompassing, most sociological research is guided more directly by theories that attempt to explain a specific behavior or social condition. These are called **"mid-range" theories**—a term coined by the distinguished sociologist Robert Merton. For example, in Chapter 6 we compare the Health Belief Model and the Theory of Reasoned Action—each a mid-range theory formulated to understand why some people but not others participate in health-promoting behaviors.

The Scientific Foundation of the Discipline

Charon and Vigilant (2008) maintain that sociology rests on both an objective and critical foundation. Sociology is a social science and sociological

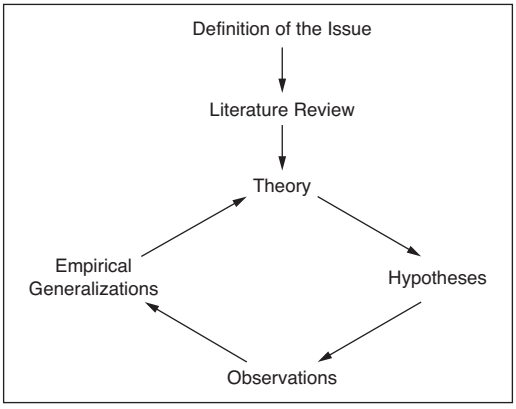
researchers have typically followed the same basic model of science and scientific research as their colleagues in the natural and physical sciences. These techniques rely on empirical procedures to obtain quantifiable data designed to test specific hypotheses and on the objectivity of scientists—that is, attempting to prevent biases from influencing the conduct of the work or the conclusions drawn.

The Scientific Process. A model of the **scientific process** is provided in Figure 1.1. According to this model, once a particular sociological question is identified, the researcher scours the literature (typically academic books and journals) to learn what research has already been done and determine what is already known about the subject. This work guides the researcher in formulating a mid-range *theory*, or general explanation, about why things happen as they do regarding the particular issue being studied.

Based on this theory, the researcher deduces one or more specific *hypotheses* (statements predicting what will be found in the research). These hypotheses must be capable of being found to be accurate or inaccurate. She then designs a research study to test the accuracy of the hypotheses, and selects a sample of people from the population about whom she collects data.

Once the data have been collected and analyzed, the researcher seeks to draw empirical generalizations from the research. She draws conclusions about the accuracy of the hypotheses and the appropriateness of the theory that guided the research. Conclusions may lend additional credence to the theory, or suggest that the theory needs to be modified, or be so inconsistent with the theory that a major revision is needed. If the results of the research are published or presented, the study will join others on the subject and be available for the next researcher doing a literature review on the subject.

Figure 1.1 The Scientific Process



Source: Adapted from Walter L. Wallace (ed.). *Sociological Theory: An Introduction,* Copyright (2017) by Routledge. Reprinted by permission of Routledge.

Data-Collection Techniques. In this section we describe some of the most important data-collection techniques used by medical sociologists. Other techniques, such as specific epidemiological techniques, are described where appropriate in the text.

1. *Survey research.* **Survey research** is the most commonly used data-gathering technique in sociology. It involves the systematic collection of information about attitudes and behaviors through personal or telephone interviews or self-administered questionnaires (increasingly done online). Survey research is particularly helpful in studying attitudes or values—subjects that cannot easily be studied in other ways—and obtaining self-reported data on health and response to illness. Survey researchers must follow proper sampling techniques to ensure that the sample is representative of the population of interest.
2. *Experimental research.* **Experimental research** seeks to identify cause-and-effect relationships between specified variables in carefully controlled conditions. It is typically conducted in a laboratory but also can be done in natural

settings. In the ideal case, two groups—the experimental group and the control group—are formed. The groups should be as similar as possible, except that only the experimental group receives the experimental condition or independent variable (the potential "cause"). Whatever change occurs in the dependent variable (the potential "effect") from the beginning to the end of the experiment can then be attributed to the independent variable. Experimental research is used in health settings for purposes such as testing the effectiveness of health education materials, innovations in teaching medical students, and new payment mechanisms.

3. *Observational research*. **Observational research** involves systematic observation of people in their natural environment. While it may be more difficult to be systematic when using this technique (although an extensive array of techniques to support systematic study is available), it does enable observation of actual behaviors rather than reports of behavior or behaviors performed in artificial settings. Important observational studies have been conducted in such diverse settings as hospitals, mortality review conferences, and patient self-help groups.
4. *Use of existing statistics*. Many demographers (those who study population size, composition, and distribution) and other medical sociologists study health problems and society's reaction to them by drawing on recorded vital and social statistics. Researchers may examine birth and death records, medical charts and insurance forms, and any compiled statistics on mortality, morbidity, medical resources, or any other aspect of health care systems.

Getting at Socially Constructed Reality. Although the scientific method continues to dominate in sociology, most sociologists acknowledge that reality is often more subjective than objective. These perspectives direct sociology to help us to understand the "socially constructed" nature of belief systems about health, illness, and healing practices. Cultures vary in their perception of what constitutes good health, in factors that shape health (e.g., Chinese belief in the presence of a vital spirit in the body), and in views of appropriate healing procedures (e.g., the importance of social support in Navajo healing). We further examine these perspectives in this text in chapters on social stress, illness behavior, and alternative healing practices.

THE ROLE OF THE MEDICAL SOCIOLOGIST IN THE TWENTY-FIRST CENTURY

What will be the future role of the medical sociologist? Perhaps three aspects will be most important.

First, the most important objective of the medical sociologist will continue to be to demonstrate and emphasize the important influence of cultural, social-structural, and institutional forces on health, healing, and illness. Medical sociologists must be ever more vigilant in using their "theoretical and methodological skills to address interesting and important questions" in order to ensure that the sociological perspective continues to influence public discussion (Pescosolido and Kronenfeld, 1995:19).

Second, medical sociologists need to maintain their spirit of free and critical inquiry (Bloom, 1990). Responding to an article that suggested that some physicians were concerned about sociologists' more liberal ideology, Mechanic (1990:89) wrote:

> It seems clear that these commentators . . . prefer a sociology that is adjunct to medical activity and accepting of its basic premises. Such a sociology would simply be a servant to medicine, not fulfilling its larger responsibility to understand medicine as a social, political, and legal endeavor; to challenge its curative and technological imperatives;

> to examine equity of care in relation to class, race, gender, age, character of illness, and geographic area; and to study the appropriate goals and objectives for health care in the context of an aging society with an illness trajectory dominated by chronic disease.

Finally, medical sociologists should continue to seek interdisciplinary collaboration. In the early years of the field, medical sociologists debated whether their primary focus should be on the **sociology of medicine** (i.e., advancing sociological theory and method through research in the medical field) or on the **sociology in medicine** (i.e., making practical contributions to the practice of medicine) (Straus, 1957). While many medical sociologists have clearly identified more with one or the other of these approaches, the distinction has blurred over time, and today most researchers understand that good sociological research can simultaneously contribute to the development of medical sociology *and* to improved health care (Bird, Conrad, and Fremont, 2000). Many refer to this as **sociology with medicine**. Straus (1999) suggested that it is even possible to take a critical perspective while working in a medical setting, as long as it is perceived as constructive, objective, and not blatantly antagonistic.

Mechanic (1995:1492) noted that "the major health problems facing national systems are complex and multifaceted and not easily amenable to analysis from the perspective of any single discipline." Coe (1997:6) encouraged working with other social scientists (as well as others involved in health research) as a way of creating "opportunities to strengthen a sociological perspective" and deepening "our understanding of the complexities of human behavior in the context of health and illness." Zussman (2000) wrote persuasively about how genuine understanding of ethical issues in medicine can be derived from utilizing both normative reflection (the primary approach of medical ethics) and empirical description (the primary contribution of sociology). Brown (2013) called for interdisciplinary work among medical sociologists and environmental sociologists and linking their work with environmental health science. Several medical sociologists (Fremont and Bird, 1999; Pescosolido, 2006, 2011; Seabrook and Avison, 2010) have recently urged greater effort to integrate social and biological explanations of matters related to health, healing, and illness.

SUMMARY

Medical sociology emerged as a scholarly field of inquiry in the 1950s and 1960s. Four factors were primarily responsible for this emergence: (1) a shift from acute infectious diseases to chronic degenerative diseases as major sources of morbidity and mortality, (2) increased focus on behavioral factors related to health and illness, (3) increased recognition of the importance of the patient–physician relationship, and (4) the increasingly complex structure of the health care system. Simultaneously, outside agencies (e.g., medical schools and government agencies) were taking an increasing interest in the field, and medical sociology was becoming institutionalized as a special interest section in the ASA.

Sociology's contributions to the study of health, healing, and illness emanate from the sociological perspective (the understanding that human behavior is largely shaped by the groups to which people belong and by the social interaction that takes place within those groups), sociology-based grand (functionalism, conflict theory, and interactionism) and mid-range (more specifically focused) theoretical approaches, and the scientific foundation and critical perspective of the discipline.

The most important tasks of medical sociology are to demonstrate and emphasize the important influence of cultural, social-structural, and institutional forces on health, healing, and illness, and to maintain a spirit of free and critical inquiry while recognizing the value and necessity of interdisciplinary research and work on health and illness.

HEALTH ON THE INTERNET

This chapter discusses recent calls for health researchers in various disciplines to work more closely together. Learn more about three of the social science disciplines that investigate health, healing, and illness by checking out their websites.

Medical sociology: https://www.asanet.org/asa-communities/sections/medical-sociology
Medical anthropology: www.medanthro.net
Health psychology: www.health-psych.org.

What is the main focus of each of these fields? What similarities and differences do you note?

DISCUSSION QUESTIONS

1. To understand better the approach and work of medical sociologists, select a recent article from the *Journal of Health and Social Behavior* or *Social Science and Medicine* (written by a sociologist) or any journal assigned by your professor. Identify its main subject, theoretical approach, data-collection technique, and main findings. How does the approach of a medical sociologist differ from that of a medical journalist or that of a layperson attempting to understand some subject related to health, healing, and illness? Identify a specific question related to medical sociology or an issue that you might be interested in studying.

2. The health and medical sector is an extraordinarily broad and important component of society. One way of identifying the importance of health, healing, and illness in society is to note the extent to which the social institution of medicine is closely interwoven with all or almost all other social institutions. Describe how the social institution of medicine interrelates to each of the following nine social institutions.

science	government	economy
education	family	law
religion	the arts	recreation

GLOSSARY

conflict theory
experimental research
functionalism
interactionism
medical sociology
mid-range theory
observational research
scientific process
social medicine
sociological imagination

sociological perspective
sociology in medicine
sociology of medicine
sociology with medicine
survey research

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CHAPTER 2

The Development of Scientific Medicine

Learning Objectives

- Explain how medical belief systems fluctuated from the earliest civilizations to the Hippocratic Era to the Medieval Era to the Renaissance and to the development of scientific medicine.
- Identify and discuss three significant contributions of Hippocrates to the understanding of health, healing, and illness.
- Describe the practice of medicine in early America.
- Identify and discuss the effects of the Civil War on medical knowledge and on the practice of medicine.
- Compare and contrast the views of Paul Starr and Vicente Navarro on the "cultural authority of medicine."

Today's healing practices and health care systems developed through centuries of efforts to understand disease and illness and to find effective means to protect and restore health. Understanding this historical development is important both as an end in itself and as a means to better understand current patterns.

Compiled histories of medicine are not in short supply, but few of these histories attempt to place the development of medicine within a social context. A *sociological* approach to the history of medicine includes at least the following: (1) a *sociology of medical knowledge*—that is, the ways in which societies socially construct medical knowledge; (2) the development and evolution of the primary activities in which physicians engage, including patient education, prevention, examination and diagnosis, prognosis, curative techniques, and palliative care (relief from suffering); (3) the evolution of the organization of medical practice, including medical specialization and the relationship to hospitals and corporations; (4) the development of hospitals and their changing role within society; and (5) the development and evolution of public health measures, including nutrition, sanitation, and public education (McKeown, 1970; White, 2009).

This chapter gives some attention to all these themes but focuses primarily on the first by describing the historical development of scientific medicine and tracing the ascendancy of scientific medical authority in America. It demonstrates that the discovery and acceptance of medical knowledge can be understood only in social context and are, at the very least, partially dependent on both cultural values (including orientation toward medicine) and the configuration of powerful interests within society. In particular, notice the following:

1. The constantly shifting character (Cassady, 1991) of medicine as understanding of disease causation shifts between a supernatural and scientific basis, as the role and popularity of alternative healing philosophies ebb and flow.

2. The constant struggle of medical researchers to discover causes and cures of disease, and the typically long time lag before major discoveries are accepted and impact patient care.
3. The important impact on medicine of other major institutions in society, including government, religion, family, and science.
4. The constantly evolving view of the nature and inevitability of disease and of the patient's responsibility for self-care.

A BRIEF HISTORY OF MEDICINE

One of the most significant events in the development of scientific medicine was the discovery that many diseases can be traced to specific causes such as bacteria, viruses, and parasites. Chief credit for this discovery is typically assigned to Louis Pasteur's formulation of the germ theory of disease in the 1860s and 1870s. Prior to this time, both laypersons and professionals used a multitude of approaches and explanations to understand the causes of disease and illness. The first part of this chapter traces this development of scientific medical knowledge.

EARLY HUMANS

Although the first forms of writing did not appear until between 4000 and 3000 BC, paleontologists have used human remnants such as teeth, bones, and mummies, as well as works of art, to study early disease and its treatment. They have learned that disease and injury are as old as humankind (and the presence of bacteria and viruses far older). There is evidence of tumors, fractures, parasitic diseases, arthritis, osteomyelitis, and dental caries that pre-date written communication. How did early humans interpret these medical calamities?

> Primitive man, noting the rising and setting of the sun and moon, the progress of the seasons, the birth, growth, and inevitable death of plants, animals, and humans, did not take long to arrive at the supposition that these phenomena did not occur by chance . . . it seemed logical to suppose that they were ordered by some all-powerful god, or gods, and equally logical was the belief that fortune and misfortune were signs of the gods' pleasure or displeasure.
>
> (Camp, 1977:11)

Supernatural Belief Systems

These "magico-religious" or **supernatural explanations of disease** evolved into complex belief systems. Diseases were caused either by direct intervention of a god or spirit or through a sorcerer (a mortal in control of supernatural forces), or through the intrusion of some foreign object into the body—a spirit or demon, or something more tangible, such as a stone or pebble (Magner and Kim, 2017).

Early humans used several divination procedures (e.g., crystal gazing or trances) to read the intentions of the supernatural. Once the diagnosis was made, appropriate cures were employed. Religious rituals such as prayer, magic spells, and exorcism were used when the origin of the disease was traced to supernatural forces, and more physical means including a "sucking-out" procedure, artificially induced vomiting, and "bloodletting" (draining blood from the body to extract the foreign presence or redistribute the blood, a practice that survived for centuries) were used in cases of object intrusion (Magner and Kim, 2017).

The most amazing procedure used was skull **trephination**—utilizing sharpened stones to drill or carve a hole in the skull. The exact purpose of trephination is unknown, but many believe it was done to release evil spirits. The holes drilled were of various sizes and configurations depending upon the diagnosis. Fossil studies demonstrate that many patients survived the surgery, and some received additional trephinations years after the original.

Trephination is considered by many to be the first surgical technique. It involved carving a circular section from the skull to reduce pressure or release evil spirits causing sickness. It likely started as long as 7,000 years ago and continued for perhaps 2,500 years.

Source: © Paul Bevitt/Alamy Stock Photo.

THE FIRST PHYSICIANS

Specialists (often religious figures) emerged to serve as intermediaries with the gods. **Shamans** (or "witch doctors" or "medicine men"), were highly revered, much-feared individuals who often provided effective medical care. Many were adept at observing animals and noting the plants and herbs they used for relief, and many practiced trial-and-error medicine—experimenting with a variety of substances or procedures to identify the most effective ones. The kinds of diseases that were most common in early societies—rheumatic diseases, digestive disorders, skin diseases, and gynecological disorders—were problems more amenable to cures available at that time than would be epidemic diseases, such as typhoid and smallpox, which many believe were not yet present.

Of course, these techniques were only part of the medical arsenal of the shaman. Prayer and incantation, ritualistic dancing, and sacrifices were also used to capture the attention of the gods. These techniques also increased the patient's confidence in the cures being attempted—an important psychotherapeutic benefit (Magner and Kim, 2017).

FOUR ANCIENT CIVILIZATIONS

Ancient Chinese Civilization

For much of human history, knowledge was passed from generation to generation orally in the form of songs and stories, as formal systems of writing did not exist. While Chinese medicine dates back to about 5000 BC, the earliest written records of it date to only about 3000 BC. The *Huang-Di Nei-Jing* (*Yellow Emperor's Cannon of Internal Medicine*), written between 300 and 200 BC, is supposedly a record of the emperor's conversations with his esteemed physician that occurred around 2650 BC.

The *Huang-Di Nei-Jing* consists of both a theoretical section (discussing interactions between the internal organs, the sense organs, and brain waves) and a practical section (describing acupuncture practices). The book deals extensively with the concept of yin and yang, which understands bodily organs as interdependent and existing in a harmonious state when the individual is healthy. Disease occurs when the natural harmony within and between organs is lost. Therefore, the goal of treatment is to restore the body's natural harmony (Cohen, 2013).

Our understanding of early Chinese medicine also comes from the work of archaeologists. For example, two graves from about 2,000 years ago included ancient silk scrolls with references to 247 herbal substances used for medicinal purposes, and

the grave of a physician from about the same time included 92 wooden bamboo slips with pharmaceutical data listing 30 prescriptions and referring to a hundred herbal medicines (Cohen, 2013).

Ancient Egyptian Civilization

Egyptian medical practices have received considerable attention due to Egypt's reputation as an especially healthy civilization and to an abundance of surviving written material. Ancient Egyptian medicine was very advanced for its time. Mummification ceremonies involved removing organs—including the intestine, pancreas, liver, spleen, heart, lungs, and brain (Nunn, 2002). This enabled physicians to develop anatomical knowledge and to understand the functions of most organs, contributing to somewhat effective treatments and even to effective dentistry.

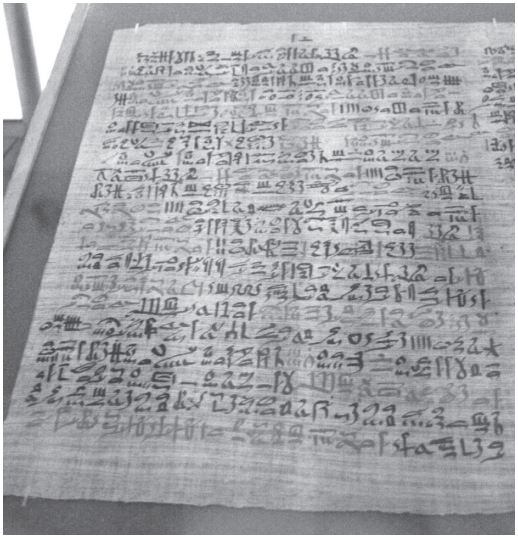
Most Egyptian physicians focused on a particular disease or a particular part of the body. Given the hot and dusty desert conditions, most specialized in eye care. Physicians were also religious leaders, and each was devoted to a different god. As a result, they tended to focus on whatever diseases were associated with their deity. They also wrote codes of medical ethics centuries before Hippocrates.

The theories and techniques of Ancient Egyptian medicine were highly regarded by other cultures and studied by early Greek physicians, forming the basis of many of their medical advancements. Imhotep—an African engineer, architect, scribe, priest, builder of tombs, and possibly a physician—lived in the 2600s BC and is referred to as the "Historical Father of Medicine." He produced journals (now lost) on surgery, anatomy, pathology, diagnosis, and experimental scientific observation and possibly built the first hospital (Makah and Jalil, 2009).

Ancient Mesopotamian Civilization

Ancient Mesopotamia is a region in Western Asia that roughly corresponds today to parts of Iraq, Kuwait, Saudi Arabia, Syria, and Turkey. It is the site of some of the most important developments in human history including the invention of the wheel, the planting of the first cereal crops, and the development of mathematics and astronomy.

Along with ancient Egyptian medicine, the Babylonians (part of Mesopotamia) introduced the concepts of diagnosis, prognosis, physical examination, and prescriptions. The **Code of Hammurabi** (a Babylonian king who lived from 1728 to 1686 BC), is possibly the first codified set of guidelines regarding responsibilities of physicians, and other writings (including the Ebers Papyrus (see Image 2.2) addressed disease causation, symptoms, and medical therapy (Teall, 2014).



Georg Ebers papyrus from the U. S. National Medical Library at the National Institutes of Health. This papyrus recounts the case of a "tumor against the god Xenus and recommends do thou nothing there against." It is also noted that the heart is the center of the blood supply with vessels attached for every member of the body. (Public Domain)

Ancient Indian Civilization

The development of medicine in India can be traced to the Indus Valley civilization (ca. 3300–1300 BC). Archaeological remains portray involvement of the Indus people in concocting drugs from plants, animal products, and minerals. More substantial evidence is provided in the Vedic civilization that flourished from about 1000 BC forward. There, evidence reflects concern with demons, curses, and poisoning, details about using plants for healing, and the possible origin of Ayurveda and Ayurvedic medicine—one of India's main medical systems (Ranganayakulu, 2015).

Ayurveda means complete knowledge for long life. It synthesizes traditional herbal practices and new therapies based on the thoughts of Buddha and other thinkers. Ayurveda posits that life and health are not predetermined, and life can be prolonged by human effort. Therapies include use of herbal drugs, massage, sauna, exercise, diet, bloodletting (including leeching), and surgery. Lengthy volumes—on topics such as anatomy, embryology, diagnosis, surgery, epidemics, and pharmacology—also include reflective passages on topics such as the origin of humans (Ranganayakulu, 2015).

GREEK AND ROMAN SOCIETIES

During the last 2,000 years BC, Greece was an especially remarkable civilization, making substantial contributions to areas such as medicine, philosophy, art, theater, and government. In the beginning of this era, religion and medicine were still inextricably linked. Apollo, the sun god, was also god of health and medicine and believed to be the inventor of the healing art. According to Greek legend, Aesculapius was the son of Apollo and such a brilliant healer that by the eighth century he was considered the Greek god of health.

Priest-physicians practiced the healing ceremony of *temple sleep*. Patients would come to temples called *asklepieia* to purify themselves (bathe), fast, read about the cures of former patients, and make offerings to Aesculapius. They were given drugs to induce sleep, and during the night, harmless "sacred" snakes would crawl around the patients and lick their wounds. Attendants would later apply salves, and according to lore, patients were cured (Magner and Kim, 2017).

Hippocrates—The "Father of Medicine"

Simultaneously, a more empirically based medicine was developing, and many physicians enjoyed favorable reputations. Ancient Greece is often regarded as the first culture to apply scientific thinking to the art of healing and produce doctors whose methods were in many respects comparable to those of modern physicians The most renowned of these physicians is **Hippocrates** of Cos (460–377 BC)—the "Father of Medicine." Hippocrates was well educated, became a successful and much beloved physician, and was an esteemed teacher. He is best known for three major contributions:

1. *The principle of natural, rather than supernatural, explanations for disease*. The most important contribution of Hippocrates to medicine is the understanding that disease is a natural process and that symptoms are the body's reactions to disease. Hippocrates emphasized that the body has its own means of recovery and that a healthy person is one in a balanced mental and physical state (Green, 1968:31).

   Hippocrates subscribed to the **humoral theory of disease**—the dominant approach for centuries. The humoral theory postulates that there are four natural elements in the world (air, earth, fire, and water) and four natural properties (hot, cold, dry, and wet). In the body, the elements are blood (hot), phlegm (cold), yellow bile (dry), and black bile (wet). A person

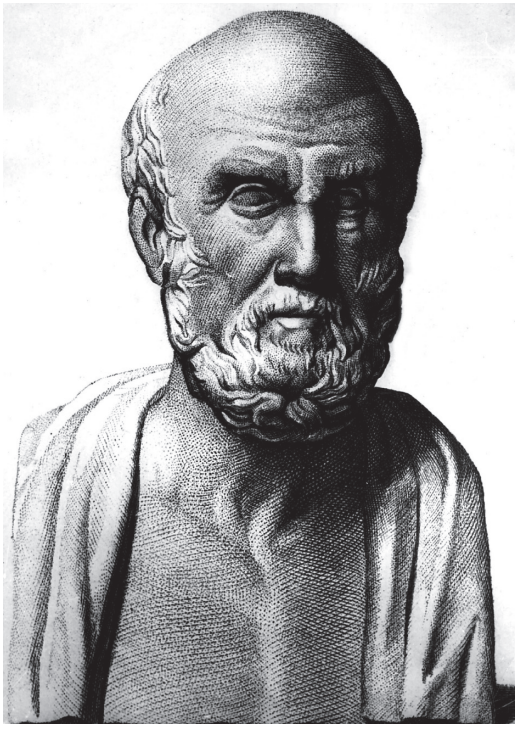
is healthy when these four humors are in balance and when the individual is in balance with the environment. Sickness results from imbalance, which is detected by physical symptoms. A warm forehead (fever) indicates excessive heat; a runny nose is a sign of excessive phlegm. Appropriate cures seek to restore balance. Cold food was a remedy for heat-related diseases, and a very dry environment was recommended for excessive phlegm. He further emphasized that the chief function of the physician is to aid the natural forces of the body.

Following Hippocrates' beliefs, Greek physicians studied the case history of patients, asking questions and attempting to learn as much as possible from the patient before arriving at a diagnosis. This two-way interaction between patient and doctor became a foundation in the history of medicine.

The Greeks were also surgeons, and some of the equipment they used is recognizable today. Greek physicians used medical tools such as forceps, scalpels, tooth-extraction forceps and catheters, and even syringes for drawing pus from wounds. The Greeks also knew how to splint and treat bone fractures, as well as add compresses to prevent infection.

2. *His writings*. One of the most important sets of medical writings ever collated is the *Corpus* Hippocraticum—more than 70 books, monographs, and essays covering a variety of medical topics. Hippocrates wrote of the importance of observing disease progression and described his own copious note-taking of medical histories, symptoms, and reactions to therapy when treating his patients. He encouraged physicians to treat the whole patient, not just a particular organ or symptom (Porter, 2006).
3. *His teaching of human compassion and ethical standards.* The first section of the **Hippocratic Oath** (see the accompanying box "The Hippocratic Oath") expresses reciprocal commitments made by physicians and their apprentices, and establishes teaching as a primary obligation of the physician. The second part is a brief summary of ethical guidelines. Some of the pledges—for example, against performing abortion, cutting for stone, and facilitating a suicide—raise questions, since they were common practices at the time even by Hippocratic physicians (Nuland, 1995). Nevertheless, the oath commanded significant attention then as it does now.

Despite the popularity of Hippocrates, Greece could be described as an "open medical marketplace" comprising several types of religious, magical, and empirical medical practitioners. Because there was no medical licensing, anyone could be a healer, and physicians reflected a multitude of medical philosophies.



Hippocrates of Cos, the "Father of Medicine," advocated natural rather than supernatural explanations for disease.

Source: © INTERFOTO/Alamy.

Roman Medicine

Medicine did not develop in Rome to the same extent it did in Greece. Mostly, Roman households ministered to the sick in their own families, often using treatments similar to those used in early societies. Beginning in the third century BC (Rome was founded in 753 BC), Greek physicians began filtering into Rome. At first, these physicians were persecuted, partly out of a jealousy that Rome was not producing its own physicians. Cato the Censor (234–149 BC), the man given credit for being the first important writer in Latin, prohibited all in his family from using these physicians (he relied instead on raw cabbage taken internally and rubbed on the body as a medicinal cure). Pliny the Elder is said to have remarked that "the honour of a Roman does not permit him to make medicine his profession, and the Romans who begin to study it are mercenary deserters to the Greeks" (Camp, 1977).

However, Roman medicine made significant contributions to health care by emphasizing the importance of nutrition and exercise and implementing elaborate sanitation procedures. Romans created the now famous aqueduct system as a means of delivering a continual supply of fresh drinking water and established public fountains and public baths. They passed ordinances requiring street cleanliness, signaling knowledge of the importance of hygiene, waste disposal sanitation, and a fresh water supply for general health.

Roman medicine also further developed surgery and physicians frequently performed successful surgical procedures. They treated war wounds, removed growths, did reconstruction surgery, and boiled equipment prior to surgery to ensure its sterility.

IN THE FIELD

THE HIPPOCRATIC OATH

I swear by Apollo the physician, and Aesculapius, Hygeia, and Panacea and all the gods and goddesses, that, according to my ability and judgment, I will keep this oath and this covenant:

To reckon him who taught me this Art equally dear to me as my parents, to share my substance with him, and relieve his necessities if required; to look upon his offspring on the same footing as my own brothers, and to teach them this Art, if they shall wish to learn it, without fee or stipulation; and that by precept, lecture, and every other mode of instruction, I will impart a knowledge of the Art to my own sons, and those of my teachers, and to disciples who have signed the covenant and have taken an oath according to the law of medicine, but no one else.

I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous.

I will give no deadly medicine to anyone if asked, nor suggest any such counsel; and in like manner I will not give to a woman an abortive remedy. With purity and with holiness I will pass my life and practice my Art.

I will not cut persons labouring under the stone, but will leave this to be done by such men as are practitioners of this work.

Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and, further, from the seduction of females or males, of freemen and slaves.

Whatever, in connection with my professional practice, or not in connection with it, I see or hear, in the life of men, which ought not to be spoken of abroad, I will not divulge, as reckoning that all such should be kept secret.

While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and practice the Art, respected by all men, in all times. But should I trespass and violate this Oath, may the reverse be my lot.

Galen

The most renowned medical figure of this era is Galen, a physician whose ideas dominated much of medicine for the next 12 centuries. Born in Asia Minor in AD 131, he studied Hippocratic medicine (and its rival theories) and eventually migrated to Rome at the age of 34. There he became famous as a physician, author, and medical researcher.

Galen made extensive contributions to the understanding of anatomy. Because he was prevented by Roman law from using human cadavers for study, Galen relied on the dissection of monkeys and pigs and the study of the skeletons of criminals. Based on these studies, he refuted several common medical notions (e.g., that blood vessels originate in the brain) and added to existing knowledge about bones, muscle groups, the brain, and various nerves. He also believed strongly in *pneuma*—that certain vital spirits (but not blood) circulated throughout the body (Magner and Kim, 2017).

Galen vehemently discouraged others from further investigating his work. Although we now know many of his theories to be false, they were extremely influential during his time and for subsequent centuries. On the other hand, his title as the "Father of Experimental Physiology" seems well deserved, as he was probably the foremost medical experimentalist until the 1600s.

THE MEDIEVAL ERA

The collapse of the Western Roman Empire, generally pegged at AD 476, was due to many reasons—both internal (political corruption, an overreliance on slavery, and military overspending) and external (the rise of the Eastern Empire and the migration of so-called *barbarians*, including Huns, Goths, and Vandals. In the East, the Byzantine Empire (which became Constantinople, and now Istanbul) survived and became a center of civilization. The time period between (roughly) AD 500 and 1500 is referred to as the Medieval Era.

Monastic Medicine

Medical practice in the first half of this era is known as **monastic medicine** because it was based in the monastery and officially controlled by the Christian Church. The Church was hostile to physicians because it believed that disease and illness are beneficial tests of faith and commitment to the church. The prevailing belief was that illnesses were a punishment by God, possession by the devil, or a result of witchcraft.

Given that diseases were thought to be religious in origin, religious cures were most appropriate. Medieval cures largely consisted of prayers, penitence, pilgrimage, intercession of saints, or other signs of religious devotion. Each disease and body part had a patron saint who could inflict pain and enact cures. For example, if one had a toothache, prayer was made to Saint Apollonia.

> A common treatment in medieval medicine was "bloodletting" or bleeding, thought to allow disease or illness to leave the blood. The individual who generally performed such procedures was known as a "barber" and traveled to towns performing minor surgeries, such as teeth pulling. The red and white striped pole which is a familiar sight in front of barber shops today originated with this practice of barbers as medieval medicine practitioners.
>
> (Abrams, 2009:1)

According to the Church, efforts to cure disease apart from religious intervention represented a form of blasphemy. In reality, many people from all stations in life considered secular healing an appropriate complement to religious healing and often used the services of herbalists, midwives, wise women, and lay specialists. These practitioners are largely responsible for preserving the medical knowledge passed on to them and ensuring its transmission to later generations.

IN THE FIELD

A MEDIEVAL JOKE

If you want to be cured of
I don't know what—
Take this herb of
I don't know what name

Apply it
I don't know where
And you will be cured
I don't know when.

Islamic Medicine

The commonwealth of Islam was founded in 622 by Mohammed. During the next 100 years, his followers conquered almost half of the world known at that time. By 1000, the Arab Empire extended from Spain to India.

The development of Islamic medicine arose out of an ambitious movement in the ninth century to translate Greek texts into Arabic. However, it went beyond this in collating and synthesizing medical principles from many of the ancient traditions, making it the most sophisticated approach to medicine during the Medieval Era.

Islamic medicine recognized that the various parts and organs (skeletal, nervous, circulatory, and reproductive) of the body existed in an interrelated physical system. Understanding of the specific functions of these systems, however, was limited by the lack of empirical data. For example, the movement of blood from the heart was recognized but not the return of blood back to the heart.

The various organs and systems within the body were referred to as the *naturals*. However, Islamic medicine believed that outside factors (*non-naturals*) also influence health. These factors included air quality, exercise, diet, sleep, digestion, and psychic states (including stressfulness, moods, and attitudes). The doctrine of the non-naturals highlights the themes of moderation and balance that also dominated medieval Islamic thinking on the healthy body (Conrad, 1995).

An interesting aspect of Islamic medicine is that the physical presence of the patient was not deemed absolutely necessary for an accurate diagnosis. A family member with no medical background could describe a relative's illness to a physician or bring in a written account or a urine sample, and the physician would identify the problem and prescribe a therapy without direct recourse to the patient (Conrad, 1995).

Scholastic Medicine

The second half of the Medieval Era is referred to as the time of **scholastic medicine**. In 1130, a proclamation from the Council of Clermont responded to growing public disillusionment with medical care by forbidding monks from practicing medicine. The cited reasons were that it was too disruptive to the peace and order of monastic sequestration. So medicine became the province of secular clergy, and universities began to play a prominent role in the education of physicians. Although it is impossible to fix the precise date at which universities in the modern sense first developed, twelfth- and thirteenth-century schools became centers where a variety of disciplines were taught (probably the most important legacy of the Middle Ages) (Magner and Kim, 2017).

During this time period, many small towns and cities developed. Given their only rudimentary sanitation practices and the lack of any effective medical care, disease spread quickly, and

devastating epidemics occurred. Leprosy reached a peak in the thirteenth century, scurvy epidemics were common, and the bubonic plague—**Black Death** raged in Europe in the 1340s, killing an estimated 43 million people in 20 years—one-third of Europe's population (Porter, 2006).

MEDICINE IN THE RENAISSANCE

The fifteenth and sixteenth centuries—the Renaissance—represent a rebirth in the arts and philosophy, scientific endeavor, technological advancement, and medicine. The scholarly blinders of the Middle Ages were discarded in favor of *humanism*, which stressed the dignity of the individual, the importance of this life (not solely the afterlife), and spiritual freedom. Greek, Roman, and Islamic medicine received significant attention. As church control of medicine declined, medical research increased. The printing of books led to a much greater sharing of ideas.

Andreas Vesalius

A key early event of the Renaissance was the refutation of many of Galen's ideas. Andreas Vesalius (1514–1564), a product of a Brussels medical family, contradicted Galen's description of anatomy. Using corpses purchased from grave robbers, he discovered that Galen's descriptions accurately portrayed monkeys but in many respects, not humans. He thought if Galen was wrong about anatomy, he might be wrong about his other conclusions (e.g., pneuma). Yet allegiance to Galen's ideas was so strong that Vesalius was dismissed from his university position for this heresy, and his career as an anatomist was finished (although he later became a court physician).

Medical Specialization

During the Renaissance, the medical specialization that had begun in the ninth and tenth centuries became more pronounced. *Physicians* were those who had graduated from a school of medicine. They provided diagnosis and consultation and were expected to bear themselves as gentlemen to match the demeanor of their wealthy patients. *Surgeons* were lower in status because they practiced skills learned in apprenticeship. Their primary responsibilities were to treat external complaints (e.g., wounds and abscesses), repair broken bones, and perform minor surgeries. In some areas, *barber surgeons* performed major surgery (often on the war-wounded) and many also practiced bloodletting. Approximately equal in prestige to surgeons, *apothecaries* dispensed herbs and spices prescribed by physicians and, especially in the countryside, often took on a physician's duties. Nevertheless, self-medication and lay healing were still very common in the Renaissance.

MEDICINE FROM 1600 TO 1900

The Seventeenth Century

At the start of the seventeenth century, there were still many significant misunderstandings about human anatomy and the causes of disease and illness (belief in the four body humors still prevailed). But there began a push to draw upon insights from both ancient civilizations and the Renaissance. Francis Bacon (1561–1626) argued, as Hippocrates and others had done, for natural explanations of diseases that could be understood through systematic observation and experimentation. The development of modern science was about to occur.

William Harvey. The most important physiological advancement in the century was the confirmation by Englishman William Harvey (1578–1657) of the circulation of blood. Though the idea had been suggested by others earlier in history, Harvey was the first to offer experimental and quantitative proof.

While Harvey maintained a clinical practice throughout his life, he devoted himself to medical investigation in anatomy and physiology. Through analysis of dissected and vivisected animals, observation of the weakening heartbeat of animals as they were about to die, and various forms of experimentation on human heartbeat, Harvey proved that the contraction of the heart drove blood into the major arteries toward the body's peripheries. When the heart rested between beats, it filled with blood carried to it by the veins.

Although Harvey's finding removed a key obstacle to medical progress, the discovery was met with skepticism by some and open hostility by others. It had little influence on the treatment of patients during Harvey's time (even in his own practice). Routinely, the process of incorporating new knowledge or techniques into medical practice occurred very slowly (Nuland, 1995).

The Eighteenth Century

The eighteenth century—the "Age of Enlightenment"—is marked by efforts to collate the advancements of the preceding century and further refine knowledge in all fields, including medicine. Sound scientific thinking was making steady progress, and advances in biology, physics, and chemistry were converging to form a rational scientific basis for every branch of clinical medicine. People perceived that they were living at a special time of rapid growth, more open intellectual inquiry, advancement in the arts, literature, philosophy, and science, and freer political expression.

Development of a Modern Concept of Pathology. Although medical progress had been achieved in many areas, understanding of disease causation in the early eighteenth century was little different than it had been 2,500 years earlier. Many still advocated the humoral theory or some variation of it; others traced disease to climatic conditions or focused on structural explanations such as the condition of the pores.

The understanding that diseases are attached to particular organs is traceable to Giovanni Battista Morgagni (1682–1771), an Italian physician and professor of anatomy at the University of Padua. Based on his systematic and thorough note-taking of patients' symptoms, Morgagni developed the *anatomical concept of disease*—that diseases could be traced to particular pathology in individual organs. He directed medicine to seek the originating localized disturbance in a particular organ. It may seem strange to us today that for so long physicians did not connect patients' symptoms with the corresponding pathological condition. And even those who challenged the prevailing notions of the day, like Andreas Vesalius and William Harvey, relied primarily on the old ways in the actual treatment of patients.

The Emergence of Public Health and Preventive Medicine. The eighteenth century also witnessed a return to interest in public health. Attention focused on the unsanitary conditions that prevailed in industry, the armed forces, prisons, and hospitals. The lack of public sanitation in cities and contaminated water supplies were seen as significant threats to health, and individuals were encouraged to attend to personal hygiene.

The foremost accomplishment of this movement was the discovery of an effective preventive measure against smallpox, a leading cause of death among children. Edward Jenner (1749–1823), a British country doctor, heard that milkmaids infected by cowpox developed an immunity to smallpox. Through experimentation (on humans), Jenner demonstrated that persons vaccinated against cowpox did not develop the disease. Although initially regarded with suspicion, it was a signal event in the history of preventive medicine. Once it became common to immunize and inoculate people and animals against diseases, the medical world exploded in new directions (Magner and Kim, 2017).

Alternative Paths of Medicine. While discussing the advancement of ideas later confirmed by science, competing theories and treatments of the day are often overlooked. The discoveries of Morgagni and Jenner, for example, do not mean that medicine was not simultaneously taking alternative routes. For example, William Cullen of Edinburgh (1712–1790) founded a medical system based on *nervous forces*—that all diseases were a result of overstimulation or an inability to respond to stimulation. Appropriate cures included stimulants and depressants. Edinburgh-trained James Graham established a "Temple of Health and Hymen" in London. The temple was filled with beautiful young virgins attired in skimpy costumes who would sing to the sick, an approach that seemed logical to Graham, who believed illness could only be cured in the presence of beautiful sights and sounds (Camp, 1977).

The Nineteenth Century

The Industrial Revolution began in England and spread to Europe and the United States. The development of large industries with many jobs pulled large numbers of workers into concentrated areas. The world was not prepared to deal with the consequences of this urbanization process. Cities that emerged around industries were severely overcrowded, typically unsanitary, and often lacked safe procedures for food and water storage, producing unhealthy living environments.

Hospital Medicine. The first half of the nineteenth century is known mostly for the importance that physicians and medical researchers attached to clinical observation. Whereas medicine in the Middle Ages was centered in monasteries and libraries and in the Renaissance (as in antiquity) was centered on the individual sickbed, in the nineteenth century, for the first time, it was centered on the hospital.

Hospitals had existed for centuries but increased rapidly in number in the 1800s in response to the massive migration of people to newly developing cities. Communicable diseases became commonplace, and many urban migrants contracted typhoid fever and tuberculosis. Admission to a hospital was the only resort. These patients provided an unprecedented opportunity for clinicians and researchers to observe the sick and search for common patterns in their symptomology, disease progression, and response to medication. By the 1830s, especially in Paris, physician-researchers were increasingly taking advantage of the opportunity to separate patients by condition and specialize in particular conditions to expand medical knowledge (Weisz, 2003). Simultaneous advances in science and technology (e.g., the invention of the stethoscope by Laennec) were extremely important events of this era, but the immediate course of medicine was more strongly influenced by clinical observation in hospitals.

Laboratory Medicine. The laboratory became the focus in the second half of the century. The work of Morgagni and others fixed attention on pathology in particular organs, but no one knew what caused something in the organ to go awry. Many theories existed, and each sought *the* answer to unlock this key mystery. The absence of a correct answer was repeatedly made obvious by the absence of effective cures.

> They bled their patients, and they puked them and purged them and blistered them as their professional forefathers had always done; they confused the metabolisms of the sick with dazzling combinations of botanicals whose real actions were only partially known, and often not known at all. They stimulated in cases whose cause was thought to be too little excitation, and they tried to induce a touch of torpor when the opposite was the case. In short, except when the need for amputation or lancing was obvious, the healers didn't really know what they were doing.
>
> (Nuland, 1995:306)

Discovery of the Cell. Needed knowledge was produced by the German pathologist Rudolf Virchow (1821–1902). Virchow pinpointed the cell as the basic physiological matter and understood that disease begins with some alteration in the normally functioning, healthy cell. Effective treatment depends on restoring the cell to normality or at least terminating abnormal development.

Ironically, while Virchow's discovery of the human cell appropriately led to study of the physiological changes involved in disease progression, Virchow was a leading proponent of the importance of environmental influences on health and illness. He understood that social class, occupation, and involvement in social networks did as much to create sickness as cellular changes. He considered medicine to be a social science and sought to address harmful social conditions. The final 30 years of his life were largely devoted to explorations in the fields of anthropology and archaeology, the development of public health measures in his hometown of Berlin, and advocating for democratic reform and political and cultural freedom in Germany. He was a much beloved figure in Germany at the time of his death.

Louis Pasteur, called the "Father of Modern Medicine," is credited with discovering the role of microorganisms as a cause of many human diseases.

Source: © Georgios Kollidas/Fotolia.

The Germ Theory of Disease. One more question remained. What causes a cell to begin to change? What condition initiates the disease process? At various points in history, medical researchers had speculated on the existence of microorganisms, but the speculation never inspired any substantial following. From the 1830s through the 1860s, various researchers observed bacteria under the microscope (minute organisms were first observed under a microscope by its inventor, Leeuwenhoek, in 1675), but their significance was not understood.

The key figure in the development of the **germ theory of disease** is Louis Pasteur (1822–1895), a French chemist now called the "Father of Modern Medicine." In 1857, Pasteur countered prevailing understandings by demonstrating that fermentation (he lived in the wine region) was not solely a chemical event but also the result of various microorganisms. By 1862, he disproved the notion that bacteria were spontaneously generated.

However, it was not until 1877, after 20 years of research on microorganisms, that Pasteur turned to human diseases. He identified the specific bacteria involved in anthrax and chicken cholera and, with several of his pupils, identified other disease-causing bacteria and developed effective vaccinations against them. By 1881, the germ theory of disease was generally accepted. With the impetus provided by Pasteur, one bacteriological discovery after another occurred. Between 1878 and 1887, the causative agents for gonorrhea, typhoid fever, leprosy, malaria, tuberculosis, cholera, diphtheria, tetanus, pneumonia,

and epidemic meningitis were discovered (Magner and Kim, 2017).

The success of these efforts inspired an exciting period in medical history. Researchers would focus on a particular disease, identify the organism that caused it, determine how it invaded the body, and create a vaccine to prevent it. The mass media—newspapers, magazines, health education pamphlets, radio, motion pictures, and even comic books—all promoted medical advancements (Hansen, 2009).

At first, however, it was understood only that vaccines worked. It required another 10 years to understand why—that the body produces antibodies in response to the presence of a disease, and that these antibodies remain in the body to fight the disease on future exposures (Magner and Kim, 2017).

Progress in Surgery. Considerable progress in surgery also occurred during this time due to three essential advancements: (1) an understanding of the "localized" nature of disease (when surgeons believed that diseases were caused by generalized forces, like humors, it made little sense to remove a particular area or organ); (2) an ability to control the patient's pain in the surgical process (which occurred in incremental stages based on trial and error throughout the nineteenth century); and (3) an ability to prevent wound infection. Throughout history, surgeons recognized that almost all surgeries (even "successful" ones) resulted in a frequently fatal infection in the wound site. ("The operation was a success, but the patient died.") Surgery performed in hospitals was especially likely to result in infection.

The importance of "asepsis" (surgical cleanliness) was discovered by Sir Joseph Lister (1827–1912), an English surgeon. Lister's concern was prompted by the large percentage (almost half) of his amputation patients who died as a result of infection. Initially convinced that infection was caused by the air that came into contact with the wound, Lister altered his thinking when he read descriptions of Pasteur's work. By the mid-1860s, he realized that sepsis (an inflammatory response throughout the body to infection) was caused by bacteria in the air rather than by the air itself. Lister learned that applying carbolic acid to the wound, his hands, the surgical instruments, and the dressings used to close the wound prevented sepsis (Magner and Kim, 2017).

THE ASCENDANCY OF MEDICAL AUTHORITY IN AMERICA

Early America

The Early Colonists. The earliest colonists endured an excruciatingly difficult voyage across the ocean (typically requiring 3 or more months) only to be met with tremendous hardship upon arrival. Although warned about the danger of disease by their sponsor, the London Company, the Jamestown settlers in 1607 were more concerned about being attacked by Indians. They selected a site for their new home that had a military advantage (being able to see up and down the river) but was limited by an inadequate food supply and brackish water. Six months after their arrival, 60 of the 100 who landed had died from dietary disorders or other diseases.

The Plymouth Colony in Massachusetts had a similar experience. Due to an outbreak of scurvy and other diseases, only 50 of the 102 arrivals survived the first 3 months. Epidemics and other infectious diseases (e.g., malaria, dysentery, typhoid fever, influenza, smallpox, scarlet fever, yellow fever, and tuberculosis) were the primary killers (Green, 1968).

The colonists also brought from Europe several contagious diseases (e.g., measles, smallpox, and mumps) that had been unknown in the Americas. Lacking immunity to these diseases, Native American populations were very susceptible and were decimated in continuing outbreaks.

Some historians estimate that up to 90 percent of Native Americans died in this process (Cassady, 1991).

Although health problems were rampant in the colonies, conditions for slaves were especially bad. Subjected to massive overwork, poor food, housing, and sanitation, and inadequate medical care, the health of slaves was very poor in both an absolute and relative sense.

Early Medical Practitioners. Medical care was provided by colonists (often clergy) who had some formal education (not necessarily in medicine). The only known medical work published in America in the 1600s was by the Reverend Thomas Thatcher of the Old South Church in Boston. The Reverend Cotton Mather (1663–1728) (precocious, vain, and fanatical about witches) is often called the first significant figure in American medicine. Though a full-time clergyman, Mather read widely about medicine, wrote numerous treatises and books on anatomy and therapeutic medicine, and is known for an understanding of inoculation far beyond that of his contemporaries.

There were a few trained physicians and surgeons who had migrated to the colonies from Europe, and it was common for young men to attach themselves to these physicians as apprentices (typically for 4 to 7 years). However, in colonial America, people from all walks of life took up medicine and referred to themselves as physicians. Many added the physician's duties to another job, such as food merchant, wig maker, or cloth manufacturer (Starr, 1982). Much medical care was delivered by the apothecary. Although apothecaries primarily made their living by providing drugs and medical preparations, they also gave medical advice, dressed wounds, and even performed amputations (Magner and Kim, 2017). Many colonists would never have seen a trained physician in their life.

There was little in the way of professionalized medicine. The first comprehensive hospital in the United States (the Pennsylvania Hospital in Philadelphia) was not built until 1751 (and the second not until 20 years later in New York); the first formalized medical school (at the College of Philadelphia) was established in 1765; and the first state medical society (in New Jersey) organized in 1766.

Domestic Medicine. Given these conditions, it is not surprising that families assumed primary responsibility for protecting the health of family members and providing therapeutic agents when they were sick. Women stored medicinal herbs just as they did preserves, made up syrups, salves, and lotions, bandaged injuries, and were expected to tend to sick family members. They called on other family and friends in the community for advice, and sometimes sought the assistance of an older woman in the community known for her healing knowledge (Cassady, 1991; Starr, 1982).

Domestic medicine was supported by an ideology that individuals and families were capable of providing for the ill. Texts on domestic medicine (typically written by physicians) were available, as was advice through newspapers, almanacs, and word of mouth. Medical jargon was criticized as unnecessary and discouraging people from family treatment.

The Revolution to the Mid-1800s

Although there were only about 3,500 physicians in the country at the start of the Revolutionary War (and only 400 of these had a university medical degree), medicine was making progress. Many of the physicians were as competent as the times allowed, and they took their responsibility to apprentices seriously. Many of America's founders, such as Benjamin Franklin, John Adams, and Thomas Jefferson, were captivated by the spirit of science, although that developed in medicine in America only much later (Abrams, 2013).

Americans who could afford formal medical education often traveled to the University of Edinburgh, then considered the world's finest medical school, or other European centers. By the turn of the century, the country had established four medical schools (Pennsylvania, Columbia, Harvard, and Dartmouth), each of which sought to offer excellence in medical training (but with a minimum of faculty members; Dartmouth had a one-man medical faculty for over a decade).

The most famous American physician of this era was Benjamin Rush (1745–1813), who, after serving an apprenticeship in the colonies, earned a medical degree from the University of Edinburgh. Rush, a signer of the Declaration of Independence and strong advocate for temperance and the abolition of slavery, wrote extensively on his medical observations and made substantial contributions to the understanding of yellow fever and psychological problems. He argued against the common stigmatization of the mentally ill, and urged that those with mental health problems be treated with kindness and humaneness (Magner and Kim, 2017).

Nevertheless, he preached and practiced many of the medical errors of the day. He believed that all symptoms and sickness were traceable to just one disease—a *morbid excitement* induced by *capillary tension*, and he recommended and used bloodletting and purging as common cures (Magner and Kim, 2017). He also had the perception that mental illness could be shaken from a person. He devised chairs suspended from the ceiling, and attendants swung and spun mentally ill patients for hours.

America's experience in the Revolutionary War highlighted the lack of accurate knowledge about disease. The annual death rate in the Continental army was approximately 20 percent; 90 percent of war deaths were the direct result of disease (Green, 1968). See the accompanying box "The Death of a President" on the use of bloodletting as a factor in George Washington's death.

IN THE FIELD

THE DEATH OF A PRESIDENT

In December 1799, the president went out riding and got caught in a cold freezing rain, hail, and snow. When he returned to the house, he went to dinner without changing his wet clothes. He quickly came down with a cold, hoarseness, and a severe sore throat.

He was feeling worse the next morning, and three physicians were called in. A mixture of molasses, vinegar, and butter was provided, but it brought on near fatal choking. A short time later, a bloodletter was added to the team. At various points during the day, blood was removed from the patient: 12 to 14 ounces at 7:30 A.M., an additional 18 ounces at 9:30 A.M., and another 18 ounces at 11:00 A.M. Despite continued pleadings by his wife for caution, another 32 ounces of blood were let at 3:00 P.M. At 4:00 P.M., calomel (mercurous chloride) and tartar emetic (antimony potassium tartrate) were administered.

After a brief spell of improvement, his condition began to weaken. Various poultices and compresses were applied. Around 10:00 P.M., he whispered burial instructions to a friend. A few minutes later, the recently retired first president of the United States, George Washington, died.

Did the attempted cure kill the former president? The bloodletting did not help and probably hastened Washington's death. It is now generally agreed that Washington had acute bacterial epiglottitis. The youngest of the three physicians had argued unsuccessfully to do a very new technique at the time, a tracheotomy, to assist Washington's breathing. That might have worked and prolonged his life (Morens, 1999; Wallenborn, 1997).

The Status of Medicine. Despite these advancements, medicine remained a downgraded occupation. Physicians had little genuine understanding of disease causation and few effective treatments. Sometimes their cures were helpful (e.g., using willow bark, a source of aspirin, or rose hips, the ripened fruit of the rose bush and a good source of vitamin C, for fevers). Other remedies may not have been helpful, but neither were they harmful (e.g., using fried daisies for a compress, or putting feverish patients in a tent with burning tobacco). However, some cures were very harmful (e.g., bleeding, purging, amputation for any broken limb, and trephination). Diseases that are now treatable meant certain death then. Epidemics were terrifying. Most accidents proved fatal.

Alternative Philosophies. For a variety of reasons, physicians were poorly paid (and often not paid at all). These reasons include: (1) the fact that family medicine was preferred by many, (2) the difficulty in seeing a substantial number of patients in a day (people lived far apart and efficient transportation was lacking), (3) the inability of many patients to pay for care (much care was provided on credit but never reimbursed), and (4) the fact that many people offered themselves as physicians (without licensure requirements, there was virtually unlimited entry into the field). Given these conditions, many could not justify the cost of formal education. Through the first half of the 1800s, physicians enjoyed little prestige (Starr, 1982).

Many alternative healing philosophies (medical sects) competed throughout this time period. "Thomsonianism" was created by Samuel Thompson (1769–1843), a New Hampshirite, who had unhappy experiences with "regular" physicians. His motto was "Every man his own physician." He believed that disease resulted from insufficient heat, and could be countered by measures that would restore natural heat (e.g., steam baths that would promote intense sweating, and hot botanicals such as red pepper). Over three decades, Thompson's influence grew, and he attracted many followers (Steele, 2005).

A second important medical sect, homeopathy, was founded by a German physician, Samuel Hahnemann (1755–1843), who viewed diseases as being primarily of the spirit. Homeopaths believed diseases could be cured by drugs that produced the same symptoms when given to a healthy person (the homeopathic law of "similars"—that like cures like). The rationale was that after a patient had taken a homeopathic medicine, their natural disease would be displaced by a weaker, but similar, artificial disease that the body could more easily overcome (Starr, 1982). For example, homeopaths view coughing as the body's effort to deal with foreign substances in the lung. Whereas medical doctors would typically try to suppress the cough, homeopaths would regard this as stifling the body's natural curative processes.

Conventional physicians (referred to as allopaths and as practicing allopathic medicine) were vocally critical of homeopaths and others who practiced forms of medicine contrary to the allopaths. They sought to discredit them, often refused to interact with them, and attempted to drive them from the field of medicine. You can read more about the relationship between conventional and alternative medicine in Chapter 11.

1850 Onward

At least three events of major significance during the second half of the nineteenth century and the first half of the twentieth century combined to "professionalize" medicine.

The Civil War. War dramatizes both the technological strengths and weaknesses of a society. Despite the ferocity of battle between the Union and Confederate forces, disease and illness represented the most lethal forces of the Civil War. An estimated 618,000 persons were killed