INTRODUCTION TO PUBLIC HEALTH
Promises and Practices
Raymond L. Goldsteen, DrPH, Karen Goldsteen, MPH, PhD,
and Terry L. Dwelle, MD, MPH, CPH

Praise for the first edition:
"More than just another preliminary textbook, this comprehensive introduction for those who are new to the field of public health weaves together its values, goals, and practices into a lucid introductory text."
—Sally Guttmacher, PhD
Professor, Director, Master's in Community Public Health Program, New York University

This second edition of Introduction to Public Health is the only text to encompass the new legislation implemented by the Affordable Care Act, with its focus on prevention and its increase in funding for prevention research. Updated and thoroughly revised, this foundational resource surveys all major topics related to the U.S. public health system, including organization on local and national levels, financing, workforce, goals, initiatives, accountability, and metrics. The text is unique in combining the perspectives of both academicians and public health officials, and examines new job opportunities and the growing interest in the public health field.

Comprehensive and accessible, the text discusses a variety of new trends in public health, particularly regarding primary care and public health partnerships. The second edition also includes information about new accountability initiatives and workforce requirements to contribute to health services research and clinical outcomes research in medical care. The text stresses the increasing emphasis on efficiency, effectiveness, and equity in achieving population health improvements, and goes beyond merely presenting information to analyze the question of whether the practice of public health achieves its promise. Each chapter includes objectives, review questions, and case studies. Also included are an instructor's manual with test questions (covering every major public health improvement initiative and introducing every major data system sponsored by the U.S. public health system) and PowerPoint slides.

New to the Second Edition:
- Completely updated and revised
- Addresses changes brought about by Obamacare
- Discusses building healthy communities and the determinants of health
- Adds new chapter on public health leadership
- Covers new developments in treating Lyme disease, West Nile virus, and other illnesses
- Investigates intentional injuries such as suicide, homicide, and war

Key Features:
- Provides information that is holistic, comprehensive, and accessible
- Covers all major topics of organization, financing, leadership, goals, initiatives, accountability, and metrics
- Relates current public health practice to the field's history and mission
- Analyzes successful and unsuccessful aspects of health care delivery
INTRODUCTION TO
PUBLIC HEALTH
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This book is dedicated to public health professionals everywhere who care deeply about the people they serve and strive daily to make the conditions in which they live healthful.
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This book describes the public health system in broad strokes in order to focus the reader on basic public health goals, principles, structures, and practices. The context in which public health is practiced today has changed considerably since its historic roots in the Industrial Revolution of the 18th and 19th centuries. As a result, public health practices are changed and changing still. However, the overarching goal of public health systems remains the same—to ensure through collective action a healthful environment for all.

The 21st century offers incredible challenges to public health. The disparity in access to healthy environments is widening, and the threats to health concern the foundations of health, including adequate and nutritious food, clean and sufficient water, and shelter. Moreover, these are global problems that touch every country to some extent and threaten to affect all countries within our lifetimes.

In order to meet these challenges, our goals in the coming years will be to embrace how, when, and where to improve the quality and value of public health received by the populations served. There will be more emphasis on unbiased decisions, fully integrated analytical information technology and computational expertise, and a systems orientation toward population health improvement. In addition, we will need to mobilize the public to support the work that must be done in order to provide a safe and healthy environment for all people.

An Instructor’s Manual and PowerPoint slides are available to supplement this text. To obtain an electronic copy of these materials, contact Springer Publishing Company at textbook@springerpub.com
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ONE

INTRODUCTION AND OVERVIEW

OBJECTIVES

Readers will understand . . .

1. How the fields of medicine and public health are different and complementary.
2. How health is defined, theoretically and in practice.
3. The multiple determinants of health and the impact of each.
4. The models that have been used to integrate the determinants of health.
5. How public health interventions have changed over the past century.

THE PROMISE OF PUBLIC HEALTH

Every year since 1873, the American Public Health Association (APHA) has held an annual meeting—a huge event attended by thousands of people, containing hundreds of sessions, over a period of nearly a week. The meeting expresses the public health priorities for that year and gives forum to the full range of current public health issues and activities. Current scientific and educational programs represent all sections, special interest groups, and caucuses. In the 2012 APHA annual meeting in San Francisco, a typical recent year, the 32 sections, three special primary interest groups (SPIGs), and 20 caucuses were represented.
Among the sections were the following:

- Aging and Public Health
- Alcohol, Tobacco, and Other Drugs
- Chiropractic Health Care
- Community Health Planning and Policy Development
- Community Health Workers
- Disability
- Environment
- Epidemiology
- Food and Nutrition
- Health Administration
- Health Informatics Information Technology Center (HIIT Center)
- HIV/AIDS
- Injury Control and Emergency Health Services
- International Health
- Law
- Maternal and Child Health
- Medical Care
- Mental Health
- Occupational Health and Safety
- Oral Health
- Physical Activity
- Podiatric Health
- Population Health Education and Health Promotion
- Population, Reproductive, and Sexual Health
- School Health Education and Services
- Social Work
- Statistics
- Vision Care

The SPIGs included:

- Alternative and Complementary Health Practices
- Ethics
- Veterinary Public Health

Some of the caucuses were:

- Academic Public Health Caucus
- American Indian, Alaska Native, and Native Hawaiian Caucus
- Asian Pacific Islander Caucus for Public Health
- Black Caucus of Health Workers
- Caucus on Homelessness
- Caucus on Public Health and the Faith Community
- Caucus on Refugee and Immigrant Health
• Community-Based Public Health Caucus
• Health Equity and Public Hospitals Caucus
• Labor Caucus
• Latino Caucus
• Lesbian, Gay, Bisexual, Transgender (LGBT) Caucus of Public Health Professionals
• Men’s Health Caucus
• Peace Caucus
• Socialist Caucus
• Spirit of 1848 Caucus
• Vietnam Caucus
• Women’s Caucus

The theme of the 2012 APHA Annual Meeting was *Prevention and Wellness Across the Lifespan*, and sessions spanned a wide array of topics, including this sampling from among the hundreds of presentations:

• Measuring the Food Environment
• Changing Planet, Changing Health: The Climate Crisis
• More Than Oil: Health and Environmental Disasters
• Addressing Health Inequities: Health Department Strategies
• Immigrant, Migrant, and Transnational Perspectives on Asian and Pacific Islander Health
• Fat or Fiction: Connections Between Tobacco Use and Weight
• Chiropractic, Public Health, and Under-Served Communities
• The Politics of Culture, Economics, and Religion in the Prevention and Wellness of Refugee and Immigrant Communities
• Healthier Communities Through Sodium Reduction in Restaurants: Evaluation Approaches to Build Practice-Based Evidence
• The Role of Public Health in Green Building Policy
• Access to Genomic Services Across the Lifespan

This small sample of topics at one meeting indicates the diversity and abundance of subjects that concern public health professionals.

In reviewing the topics from the APHA Annual Meeting in 2009 and noting their scope and variety, we may be motivated to ask, “What does teaching human genetics have in common with purchasing healthy foods?” “What is the link between international trade regulations and youth suicide prevention?” “How are climate change and community capacity building connected?” “What is the link between intimate partner violence and drinking water?” Similarly, when we examine the composition of the public health workforce through job postings at the APHA Annual Meeting and other public health employment sites, we see positions as different as sanitarian, community organizer, health educator, environmental safety specialist, infectious disease manager, epidemiologist, microbiologist, data analyst, and reproductive health specialist. Again, we may ask, “What is the common thread that connects these disparate types of employment?”
The answer to these questions lies in the following statement written in 1988 by the Institute of Medicine’s (IOM) Committee for the Study of the Future of Public Health:

The broad mission of public health is to “fulfill society’s interest in assuring conditions in which people can be healthy.” (p. 1)

This statement was intended to capture the essence of the historical and present work of public health, and it binds us together by identifying our common bond. It asserts that we, in the field of public health, are engaged in a great societal endeavor to create the circumstances that make health possible. We may have little in common on a day-to-day basis with our fellow public health professionals, and our knowledge base and skills may vary widely from others in our field. However, our mission is the same, and each of us contributes to that mission in some important way, which we will begin to explicate in the coming pages. Before proceeding, though, we need to examine this statement more closely to understand its assumptions and implications. By examining these, we understand our commonalities with other professionals focused on health—particularly the clinical professions such as medicine, nursing, dentistry, physical therapy, and others—as well as our unique role among health professionals.

First, the idea of assuring health for all people—the entire population—is embedded in the mission statement. Although public health will focus on different populations within the larger population when planning services, we are obligated to ensure health-producing conditions for all people—not just the poor, not just the rich, but people of all incomes; not only the young or the old, but people of all ages; not exclusively Whites or Blacks, but people of all races and ethnicities.

Second, the belief that a society benefits from having a healthy populace is clear in the public health mission’s phrase “to fulfill society’s interest.” The work of public health is a societal effort with a societal benefit. Public health takes the view held by many professions and societies throughout human history that healthy people are more productive and creative, and these attributes create a strong society. Healthy people lead to better societies. For the welfare of the society, as a whole, it is better for people to be healthy than sick. There will be less dependence, less lost time from productive work, and a greater pool of productive workers, soldiers, parents, and others needed to accomplish society’s goals. Thus, as public health professionals, we believe that society has an interest in the health of the population; it benefits the society, as a whole, when people are healthy.

Third, the public health mission acknowledges that health is not guaranteed. The mission states that “people can (not will) be healthy.” Health is a possibility, although we intend through our actions to make it highly probable. However, not everyone will be healthy, even if each one exists in health-producing conditions. Public health efforts will not result in every person being healthy—although we certainly would not object to that kind of success.
Rather, public health creates conditions in which people can be healthy. Whether any single individual is healthy, we acknowledge, will vary.

The fourth and fifth assumptions differentiate public health from the healing, or clinical, professions—medicine, nursing, dentistry, physical therapy, physician assistant, and others—that we will refer to for simplicity throughout the remainder of this book as the clinical professions. All clinical professions believe in the obligation of their practitioners to care for all people in need of their services. Further, they accept the fallibility of their professions; not every patient will be “cured” regardless of the effort expended by the practitioner to bring about this outcome. Finally, all health care professions believe that improving health is a benefit, not only to the individuals treated, but also to the society as a whole. These beliefs, for example, are evident in the widely referenced Physician’s Oath adopted by the World Medical Association Declaration of Geneva (1948 and amended by the 22nd World Medical Assembly in 1968):

At the time of being admitted as a member of the medical professions:

- I solemnly pledge myself to consecrate my life to the service of humanity;
- I will give to my teachers the respect and gratitude which is their due;
- I will practice my profession with conscience and dignity; the health of my patient will be my first consideration;
- I will maintain by all the means in my power, the honor and the noble traditions of the medical profession; my colleagues will be my brothers;
- I will not permit considerations of religion, nationality, race, party politics, or social standing to intervene between my duty and my patient;
- I will maintain the utmost respect for human life from the time of conception, even under threat. I will not use my medical knowledge contrary to the laws of humanity;
- I make these promises solemnly, freely, and upon my honor.

(Declaration of Geneva [1948]. Adopted by the General Assembly of World Medical Association at Geneva Switzerland, September 1948.)

Thus, public health shares with the clinical professions a fundamental caring for humanity through concern for health. For these reasons, public health is sometimes viewed as a type of clinical profession.

Prevention: The Cornerstone of Public Health

However, if we examine the public health mission closely, we find that public health is complementary to the clinical professions, but not subsumed by them. The critical differences between public health and the clinical professions
relate to their strategies for creating a healthy populace. The fourth and fifth assumptions embedded in the public health mission are that prevention is the preferred strategy, and to be successful, prevention must address the “conditions,” that is, environment, in the fullest sense, in which people live. The classic and defining public health strategy is to prevent poor health by “assuring conditions in which people can be healthy.”

This choice of a prevention- and environment-based strategy clearly distinguishes public health from the clinical professions, which focus on diagnosing individuals and treating them when they have health problems detectable by clinical methods—history, physical examinations, laboratory tests, imaging, and so forth. Here, an understanding of the different types of prevention—primary, secondary, and tertiary—is necessary to distinguish between public health and the clinical professions.

Primary, Secondary, and Tertiary Prevention

There are three types of prevention: primary, secondary, and tertiary. Fos and Fine (2000) define primary, secondary, and tertiary prevention as follows:


Primary prevention intends to prevent the development of disease and the occurrence of injury, and thus, to reduce their incidence in the population. Examples of primary prevention include the use of automobile seat belts, condom use, skin protection from ultraviolet light, and tobacco-use cessation programs. Secondary prevention is concerned with treating disease after it has developed so that there are no permanent adverse consequences; early detection is emphasized. Secondary prevention activities are intended to identify the existence of disease early so that treatments that might not be as effective when applied later can be of benefit. Tertiary prevention focuses on the optimum treatment of clinically apparent and clearly identified disease to reduce complications to the greatest possible degree. Tertiary prevention often involves limiting disability that occurs if disease and injury are not effectively treated.

The central focus of clinical professions is to restore health or prevent exacerbation of health problems. Thus, health care is primarily concerned with secondary and tertiary prevention: (a) early detection, diagnosis, and treatment of conditions that can be cured or reversed (secondary prevention); and (b) treatment of chronic diseases and other conditions to prevent exacerbation and minimize future complications (tertiary prevention). The health care system undoubtedly has its smallest impact on primary prevention, once again that group of interventions that focus on preventing disease, illness, and injury from occurring. Moreover, as Evans and Stoddart (1994) argue, other than for
immunization, the major focus of the health care system’s primary prevention activities is on the behavioral determinants of health, rather than structural or policy factors:

The focus on individual risk factors and specific diseases has tended to lead not away from but back to the health care system itself. Interventions, particularly those addressing personal lifestyles, are offered in the form of “provider counseling” for smoking cessation, seat belt use, or dietary modification. These in turn are subsumed under a more general and rapidly growing set of interventions attempting to modify risk factors through transactions between clinicians and individual patients.

The “product line” of the health care system is thus extended to deal with a more broadly defined set of “diseases”: unhealthy behaviors. The boundary becomes blurred between, e.g., heart disease as manifest in symptoms, or in elevated serum cholesterol measurements, or in excessive consumption of fats. All are “diseases” and represent a “need” for health care intervention. . . . The behaviors of large and powerful organizations, or the effects of economic and social policies, public and private, [are] not brought under scrutiny. (pp. 43–44)

Another often-quoted modern version of the Hippocratic Oath written by Lasagna (1962) in The Doctor’s Dilemma provides an example of the difference between the clinical professional, whose improvement strategy is based on diagnosis and treatment of individuals, and the public health professional.

I swear to fulfill, to the best of my ability and judgment, this covenant:

- I will respect the hard-won scientific gains of those physicians in whose steps I walk, and gladly share such knowledge as is mine with those who are to follow.
- I will apply, for the benefit of the sick, all measures [that] are required, avoiding those twin traps of overtreatment and therapeutic nihilism.
- I will remember that there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon’s knife or the chemist’s drug.
- I will not be ashamed to say “I know not,” nor will I fail to call in my colleagues when the skills of another are needed for a patient’s recovery.
- I will respect the privacy of my patients, for their problems are not disclosed to me that the world may know. Most especially must I tread with care in matters of life and death. If it is given me to save a life, all thanks. But it may also be within my power to take a life; this awesome responsibility must be faced with
great humbleness and awareness of my own frailty. Above all, I must not play at God.

- I will remember that I do not treat a fever chart, a cancerous growth, but a sick human being, whose illness may affect the person’s family and economic stability. My responsibility includes these related problems, if I am to care adequately for the sick.
- I will prevent disease whenever I can, for prevention is preferable to cure.
- I will remember that I remain a member of society, with special obligations to all my fellow human beings, those sound of mind and body as well as the infirm.
- If I do not violate this oath, may I enjoy life and art, respected while I live and remembered with affection thereafter. May I always act so as to preserve the finest traditions of my calling and may I long experience the joy of healing those who seek my help.

Although it contains one statement about the importance of primary prevention—“I will prevent disease whenever I can”—it is clear that the physician is viewed as a healer of individuals. The idea conveyed by this statement is that the physician uses clinical tools to treat health problems that have already begun, which is very different from the public health professional whose main goal is primary prevention of health problems employing strategies based on improving the circumstances in which people live.

Secondary and Tertiary Prevention and Public Health

The public health emphasis on primary prevention does not mean that public health has no role or interest in secondary and tertiary prevention. On the contrary, public health professionals are vitally interested and involved in secondary and tertiary prevention. However, their focus is on ensuring access to effective clinical care, rather than on providing the care itself. Preventing long-term consequences of health problems and limiting the progression of illness, disability, and disease is dependent on access to excellent medical care. Thus, ensuring that all people have health insurance has been an important issue for public health in the United States, as has health care reform that improves the quality and efficiency of health care. Access to primary care and the specialties has historically been a target of public health initiatives. Other issues that impact on people’s ability to access and use health care appropriately are important, as well. These include such concerns as transportation to health care providers, cultural competence of health care providers, health literacy of patients, and the efficiency and effectiveness of health care delivery.

An example of public health’s interest in secondary and tertiary prevention is the development of Medically Underserved Areas (MUAs), Medically
Underserved Populations (MUPs), and Health Professional Shortage Areas (HPSAs):

Medically Underserved Areas/Populations are areas or populations designated by HRSA as having: too few primary care providers, high infant mortality, high poverty and/or high elderly population. Health Professional Shortage Areas (HPSAs) are designated by HRSA as having shortages of primary medical care, dental or mental health providers and may be geographic (a county or service area), demographic (low income population), or institutional (comprehensive health center, federally qualified health center or other public facility). (U.S. Department of Health & Human Services [DHHS], 2010)

Through designation of areas and populations as medically underserved, programs responding to their medical needs have been developed. These programs address the concerns about access to quality medical care in specific populations and geographic areas, which is necessary for secondary and tertiary prevention. Public health is vitally interested and involved in the identification of MUPs and MUAs, as well as in the development of programs to meet these needs.

If we were to apply the language of the clinical professions to public health, we might say that classic public health “diagnoses” and “treats” the circumstances in which people live, and the success of public health is measured by the health of the populations living in the “treated” circumstances. However, the languages of epidemiology and ecology are preferred to describe the work of public health professionals, as we explore later in this chapter. In summary, public health is proactive, rather than curative: Do not wait until people get sick and then treat them. Rather, go out and create conditions that promote health and prevent disease, injury, and disability.

An infectious disease outbreak provides an example of the complementary roles played by public health and clinical professionals:

In early December 2009, the Centers for Disease Control and Prevention’s (CDC’s) PulseNet staff identified a multistate cluster of 14 E. coli O157:H7 isolates with a particular DNA fingerprint or pulsed-field gel electrophoresis (PFGE) pattern reported from 13 states. CDC’s OutbreakNet team began working with state and local partners to gather epidemiologic information about persons in the cluster to determine if any of the ill individuals had been exposed to the same food source(s). Health officials in several states who were investigating reports of E. coli O157:H7 illnesses in this cluster found that most ill persons had consumed beef, many in restaurants. CDC is continuing to collaborate with state and local health departments in an attempt to gather additional epidemiologic information and share this information with FSIS. At this time, at least some of the illnesses appear to be associated with products subject to a recent FSIS recall. (Centers for Disease Control and Prevention, 2010a)
Thus, public health officials collaborated with physicians, who had diagnosed and treated patients with the disease, as well as with officials from the U.S. Department of Agriculture’s Food Safety and Inspection Service to determine the source of the infection and how to prevent recurrence of infection in other people. Public health officials addressed the circumstances in which the infection developed so that others would be spared the illness resulting from exposure to the pathogen.

Summary

The control of an infectious disease outbreak is an example of the promise of public health—collective action that prevents the occurrence of disease, disability, and premature death by “assuring conditions in which people can be healthy.” Because of public health, people will have the opportunity, to the best of our knowledge and capabilities, to be healthy. Public health, as a field and as a collection of practicing professionals, will ensure that the environment in which people lead their lives promotes health.

Underlying this mission is a commitment to social justice because it assumes that all people are deserving of healthy conditions in which to live—not just the rich, but people of all incomes; not only the young or the old, but people of all ages; not exclusively the majority race or ethnicity, but people of all races and ethnicities. Public health is a leader and plays an integral role in carrying out this societal obligation. For this reason, public health is often associated with advocating and providing services for the structurally disadvantaged—those with the least power in their social circumstances. As Krieger and Birn (1998) argue powerfully:

Social justice is the foundation of public health. This powerful proposition—still contested—first emerged around 150 years ago during the formative years of public health as both a modern movement and a profession. It is an assertion that reminds us that public health is indeed a public matter, that societal patterns of disease and death, of health and well-being, of bodily integrity and disintegration, intimately reflect the workings of the body politic for good and for ill. It is a statement that asks us, pointedly, to remember that worldwide dramatic declines—and continued inequalities—in mortality and morbidity signal as much the victories and defeats of social movements to create a just, fair, caring, and inclusive world as they do the achievements and unresolved challenges of scientific research and technology. To declare that social justice is the foundation of public health is to call upon and nurture that invincible human spirit that led so many of us to enter the field of public health in the first place: a spirit that has a compelling desire to make the world a better place, free of misery, inequity, and preventable suffering, a world in which we all can live, love, work, play, ail and die with our dignity intact and our humanity cherished. (p. 1603)
The cornerstone of public health is prevention, particularly primary prevention. Prevention is public health’s historic and ideal approach to promoting health, and the distinguishing public health prevention strategy is to influence the “conditions” (i.e., the environment, in the fullest sense) in which people live. The classic and defining public health strategy to prevent poor health is to ensure “conditions in which people can be healthy.” A commitment to social justice underlies the public health mission to achieve health-promoting conditions for all. How public health has attempted to ensure conditions that promote health is the story of the practice of public health, which we will introduce next.

THE PRACTICE OF PUBLIC HEALTH

What is entailed in “ensuring conditions in which people can be healthy?” In the answer to this question lies the source of the varied interests, knowledge, and skills that differentiate public health professionals from each other. The causes of poor health are many and complex, and therefore, solutions are complex and diverse, as well. Public health conceptualizes and organizes this complexity by applying the concepts and principles of ecology, which views individuals as embedded within their environment, or context. The ecological approach to understanding how health is either fostered or undermined is fundamental to public health practice.

However, before we can discuss the practice of public health, that is, the ways that public health professionals attempt to influence context and promote health, we will discuss how we define health and conceptualize the complex set of factors that affect health, called the determinants of health.

How Do We Define Health?

The most famous and influential definition of health is the one developed by the World Health Organization (WHO) in the 1940s: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” It was adopted in 1946 and has not been amended since 1948 (WHO, 1946). Many subsequent definitions have taken an equally broad view of health, including that of the Association of Teachers of Preventive Medicine (Stokes, Noren, & Shindell, 1982): “A state characterized by anatomical, physiological, and psychological integrity; ability to perform personally valued family, work, and community roles; ability to deal with physical, biological, psychological, and social stress; a feeling of well-being; and freedom from the risk of disease and untimely death” (p. 34).

Both definitions exemplify the tendency over the second half of the 20th century to enlarge the definition of health beyond morbidity, disability, and premature mortality to include sense of well-being, ability to adapt to change, and social functioning. However, in practice, the more limited view of health as diagnosable morbidity, mortality, and disability usually guides public
health efforts to improve health status. As Young (1998) writes, “Indeed, the WHO definition is ‘honored in repetition, rarely in application.’ Health may become so inclusive that virtually all human endeavors, including the pursuit of happiness, are considered within its domain” (p. 2). In this book, as in general public health practice, the term health will refer to the more restricted definition—diagnosable morbidity, disability, and premature mortality.

The Determinants of Health

There are many influences on individual and population health. As the WHO (2010) puts it:

Many factors combine together to affect the health of individuals and communities. Whether people are healthy or not, is determined by their circumstances and environment. To a large extent, factors such as where we live, the state of our environment, genetics, our income and education level, and our relationships with friends and family all have considerable impacts on health, whereas the more commonly considered factors such as access and use of health care services often have less of an impact.

It is generally accepted that the determinants of health include the physical environment—natural and built—and the social environment, as well as individual behavior, genetic inheritance, and health care (Evans & Stoddart, 1994). Note that although we talk about the “determinants of health,” they are usually discussed in terms of how they relate to poor health—the determinants of poor health. A brief overview of the determinants of health follows.

Physical Environment

Physical environment includes both the natural and built environments. The natural environment is defined by the features of an area that include its topography, weather, soil, water, animal life, and other such attributes; the built environment is defined by the structures that people have created for housing, commerce, transportation, government, recreation, and so forth. Health threats arise from both the physical and built environments. Common health threats related to the natural environment include weather-related disasters such as tornados, hurricanes, and earthquakes, as well as exposure to infectious disease agents that are endemic in a region, such as *Plasmodium falciparum*, the microbe that causes malaria and is endemic in Africa.

Health threats related to the built environment include exposure to toxins and unsafe conditions, particularly in occupational and residential settings where people spend most of their time. Many occupations expose workers to disease-causing substances, high risk of injury, and other physical risks. For example, the greatest health threats to U.S. farm workers are injuries...
from farm machinery and falls that result in sprains, strains, fractures, and abrasions (Myers, 2001). There are well-documented health threats to office workers from indoor air pollution, found by research beginning in the 1970s, including passive exposure to tobacco smoke, nitrogen dioxide from gas-fueled cooking stoves, formaldehyde exposure, “radon daughter” exposure, and other health problems encountered in sealed office buildings (Samet, Marbury, & Spengler, 1987; U.S. Environmental Protection Agency [EPA], 2006). In residential settings, exposure to pollutants from nearby industrial facilities, power plants, toxic waste sites, or a high volume of traffic presents hazards for many. In the United States, these threats are increasingly known to have a disproportionately heavy impact on low-income and minority communities (CDC, 2003; Institute of Medicine [IOM], 1999).

Social Environment

The social environment is defined by the major organizing concepts of human life: society, community, religion, social network, family, and occupation. Individuals’ lives are governed by religious, political, economic, and organizational rules—formal and informal—that reflect the cultural norms, values, and beliefs of their particular social context. These formal and informal rules—the values, beliefs, and norms they reflect—have historical roots, and they affect how individuals live and behave; their relationships with others; and what resources and opportunities individuals have to influence their lives. They shape the relationship between individuals and the natural environment and how the built environment is conceived and developed.

An important aspect of the social environment is the status, resources, and power that individuals have within their social environment or context. In the United States and other Western countries, this aspect is indicated by an individual’s socioeconomic status—a combination of education, occupation, and income/wealth—and an individual’s race and/or ethnicity. Socioeconomic status is associated with significant variations in health status and risk for health problems. There is a large literature demonstrating the relationship between socioeconomic status and health, including a gradient in which the higher the socioeconomic status, the better the health (Lynch, Smith, Kaplan, & House, 2000). The famous Whitehall Study of English civil servants in the 1970s was one of the first and most influential to demonstrate this relationship:

The Whitehall Study consists of a group of people of relatively uniform ethnic background, all employed in stable office-based jobs and not subject to industrial hazards, unemployment, or extremes of poverty or affluence; all live and work in Greater London and adjoining areas. Yet in this relative homogeneous population, we observed a gradient in mortality—each group experiencing a higher mortality than the one above it in the hierarchy. The difference in mortality between the highest and lowest grades was three-fold. (Marmot, Bobak, & Smith, 1995, p. 173)
Similarly, much research indicates that disparities in health status exist between racial and ethnic minority groups. Minority Americans, including African Americans, Hispanics/Latinos, Native Americans, and Pacific Islanders, generally have poorer health outcomes than do Whites. The preventable and treatable conditions for which disparities between majority and minority Americans have been shown include (CDC, 2011):

- Preventable hospitalizations
- HIV/AIDS
- Infant mortality
- Deaths due to motor vehicle crashes
- Suicide
- Drug-induced deaths
- Coronary heart disease
- Stroke
- Hypertension
- Asthma/poor air quality
- Diabetes
- Cancer

Although race and ethnicity do not “explain” these disparities, they point to the need for explanations. Discrimination and its consequences are a recent focus for investigations attempting to explain racial and ethnic disparities (Krieger, 2000; Mays, Cochran, & Barnes, 2007).

Nonphysical occupational factors also affect health. For example, a great deal of research demonstrates the relationship between poor health outcomes and the psychosocial work environment. The demand–control model is one well-known theory, hypothesizing that employees with the highest psychological demands and the lowest decision-making latitude are at the highest risk for poor health outcomes (Karasek, Baker, Marxer, Ahlbom, & Theorell, 1981; Karasek et al., 1998; Theorell, 2000). In addition, job loss and threat of job loss also have a negative impact on health. Evidence suggests that transitions from employment to unemployment adversely affect physical health and psychological well-being among working-age persons (Dooley, Fielding, & Levi, 1996; Kasl & Jones, 2000; Kasl, Rodriguez, & Lasch, 1998).

Another large body of research on the social environment and health focuses on social integration, social networks, and social support (Berkman & Glass, 2000). For example, numerous studies over the past 20 years have found that people who are isolated or disengaged from others have a higher risk of premature death. In addition, research has found that survival of cardiovascular disease events and stroke is higher among people with close ties to others, particularly emotional ties. Social relations have been found to predict compliance with medical care recommendations, adaptation to adverse life events such as death of a loved one or natural disaster, and coping with long-term difficulties such as caring for a dependent parent or a disabled child.

A great deal of research in the area of social support was conducted during the 1960s and 1970s. A seminal review article published in 1977 by Kaplan,
Cassel, and Gore identified methodological issues that needed to be addressed. Since then, there has been further specification of the relationship between social support and health to explain the relationship. For example, Cohen (2004) discusses three factors that indicate different aspects of social relationships: social integration, negative interaction, and social support, each influencing health through different mechanisms. Thoits (1982) reanalyzed data to test the hypothesis that disadvantaged sociodemographic groups such as low-income women are more vulnerable to the effects of life events because they experience more negative events and have fewer psychological resources to cope with them. Although the relationship between social support and health is still not well understood, it is found over and over again in health studies.

Genetic Inheritance

Our knowledge about the effects of genetic inheritance on health is growing rapidly. It is understood that, with few exceptions, disease processes “are determined both by environmental and by genetic factors. These usually interact, and individuals with a particular set of genes may be either more or less likely, if exposed, to be at risk of developing a particular disease. These effects can be measured by showing that the relative risk of exposure to an environmental factor is significantly greater (or lesser) for the subgroup with the abnormal gene, than the risk in those without” (Pencheon, Guest, Melzer, & Gray, 2001, p. 544).

Health Behavior

The term health behavior can refer to behaviors that are beneficial to health. However, the term is generally used in the negative to refer to behaviors that harm health, including smoking, abusing alcohol or other substances, failing to use seat belts or practicing other unsafe behaviors, making unhealthy food choices, and not engaging in adequate physical activity.

The effect of health behaviors on health status has been widely studied and found to be an important determinant of health. Consider the 10 leading causes of death, as of 2006, as characterized by diagnosed disease or condition in the general population: diseases of the heart, malignant neoplasms (cancer), cerebrovascular diseases (stroke), chronic lower respiratory diseases, unintentional injuries (accidents), diabetes mellitus, Alzheimer’s disease, influenza and pneumonia, nephritis, nephrotic syndrome and nephrosis, and septicemia. The next five leading causes of death were intentional self-harm (suicide), chronic liver disease and cirrhosis, essential hypertension and hypertensive renal disease, Parkinson’s disease, and assault (homicide; CDC, 2010b). In one way or another, personal health behavior has an impact on the occurrence in any given individual of most of the diseases and conditions on this list. Further, looking at the cause of death in a different way, that is, by major contributing cause of the disease to which the death was attributed rather than by the disease itself, in the first study of its kind, McGinnis and Foege (1993) showed that, as of 1990, the leading factors were tobacco use, dietary patterns,
sedentary lifestyle, alcohol consumption, microbial agents, toxic agents, firearms, sexual behavior, motor vehicles, and use of illicit drugs. As of 2002, the situation remained the same (McGinnis, Williams-Russo, & Knickman, 2002).

Health Care as a Determinant of Health

If we argue that health is the product of multiple factors including genetic inheritance, the physical environment, and the social environment, as well as an individual’s behavioral and biologic response to these factors, we see that health care has an impact late in the causal chain leading to disease, illness, and injury. Often by the time the individual interacts with the health care system, the determinants of health have had their impact on their health status, for better or for worse. Thus, the need for health care may be seen as a failure to prevent the determinants of health from adversely affecting the individual patient.

The success of any health care system is affected by the other determinants of health. Genetic predisposition to breast cancer may limit the long-term success rates of cancer treatment. Continued exposure to toxins in the environment or at work may decrease the likelihood that the physician can stabilize an individual with allergies. Health behaviors, such as smoking or substance abuse, may stymie the best health care system when treating an individual with lung disease. The lack of support at home for changes in behaviors or adherence to medical regimens may undermine the ability of the health care system to successfully treat an individual with diabetes. Poverty, race, and ethnicity often limit access to health care, and therefore, the ability of physicians to diagnose and treat health problems effectively (Smedley, Stith, & Nelson, 2003). We recognize that health, as well as health care, exist within a biological, physical, and social context, and all of these factors influence the level of probability of success of a health care system. Health care is only one determinant of health.

Relationship Among the Determinants of Health

The determinants of health do not act independently of each other. They are interconnected, and the concepts of ecology provide the framework for understanding how to model their interconnectedness. In the most general sense, the ecological approach means that the person is viewed as embedded in the environment—both social and physical—and is both influenced by and influences that environment. Stokols (1996) outlines the history of ecology, and social ecology, which are fundamental to the public health perspective and its practice:

The term ecology refers to the study of the relationships between organisms and their environments. Early ecological analyses of the relations between plant and animal populations and their natural
habitats were later extended and applied to the study of human communities and environments within the fields of sociology, psychology, and public health. The field of social ecology, which emerged during the mid-1960s and early 1970s, gives greater attention to the social, institutional, and cultural contexts of people–environment relations than did earlier versions of human ecology, which focused primarily on biologic processes and the geographic environment. (p. 285)

Stokols (1996) identifies core principles of social ecology that make it an appropriate overarching paradigm for public health. First, ecological models may include all aspects of the environment that impact health, including physical, social, and cultural aspects. Second, ecological models include characteristics of individuals, and, for example, can incorporate their genetic heritage, psychological attributes, and behavioral practices. Third, concepts from systems theory are used to understand the interplay between environmental and individual characteristics and their mutual influence on health.

For instance, people–environment transactions are characterized by cycles of mutual influence, in which the physical and social features of settings directly influence occupants’ health and, concurrently, the participants in settings modify the healthfulness of their surroundings through their individual and collective actions. (p. 286)

Fourth, the ecological perspective emphasizes the interdependence of all factors contributing to health, including the nearby and distant factors, as well as those in different domains such as family, work, neighborhood, and community.

Thus, efforts to promote human health must take into account the interdependencies that exist among immediate and more distant environments (e.g., the “spill-over” of workplace and commuting stress to residential environments, and the influence of state and national ordinances on the healthfulness of occupational settings). (Stokols, 1996, p. 286)

Fifth, the ecological perspective is interdisciplinary, which is required for public health practice. With the multitude of factors that affect human health, many disciplines are required to understand the interplay between them and their effect on health and to bring about health improvement. “Thus, ecologically based health research incorporates multiple levels of analysis and diverse methodologies . . . for assessing the healthfulness of settings and the well-being of persons and groups” (Stokols, 1996, p. 286).

The classic 1959 book, *Mirage of Health*, by Rene Dubos provides an example of how the ecological approach is applied to human health. Dubos describes
the causes of the tuberculosis epidemic in the tenements of 1900 New York City and other U.S. cities. He recounts

The story of the roundabout way in which a microscopic fungus probably native to Central America destroyed the potato crop in Ireland and exerted thereby a dramatic influence on the destiny of the Irish people, illustrating the complexity of the interplay between the external environment and the affairs of man. (pp. 96–97)

Dubos’s description of the factors contributing to the development of the tuberculosis epidemic includes international exploration and trade by Europeans subsequent to the 15th century that transported a native plant, the wild potato, from the Andes to Ireland and elsewhere in Europe; the improvement of the wild potato in Europe for large yields, which made the plant more susceptible to infection than the wild varieties; a fungus that accompanied the potato to Europe and was benign until it was enabled by unusually wet weather conditions to proliferate and destroy the potato crop in 1845 and 1846 in Ireland; the growth of the Irish population from 3.5 to 8 million between 1700 and 1840; the dependence on the potato for sustenance among the burgeoning Irish population; the political and economic dependence of Ireland on England that resulted in the food shortage following the destruction of the 1845 and 1846 potato crops; the disaster that followed in which a million Irish died of starvation and many more became susceptible to disease; and finally, the mass emigration from Ireland to the United States in the middle of the 19th century, when the immigrants took up residence in the crowded and unhealthy conditions of the tenements of industrial cities along the Atlantic coast.

The profound upheaval in their way of life made them ready victims to all sorts of infection. The sudden and dramatic increase of tuberculosis mortality in the Philadelphia, New York, and Boston Areas around 1850 can be traced in large part to the Irish immigrants who settled in these cities at that time. (Dubos, 1959, p. 100)

Dubos’s account included many determinants of health, including aspects of the social environment, the physical environment, and individual behavior. Interestingly, he does not mention health care, or its absence, as a factor leading to the tuberculosis epidemic, but then there was little that medicine offered at that time for the treatment of tuberculosis. His analysis of events incorporated the “causes of causes,” which were political, economic, and cultural. These included the impetus among Europeans to explore and trade that caused the transport of the wild potato from Central America to Europe; the application of scientific principles to farming that caused the improvement of the potato; the political and economic relationships between Ireland and England that caused the dependence of the Irish on the potato for food; and so forth. We understand the disease, not only in terms of immediate individual actions, for example, sanitary habits of the individuals with tuberculosis, but in terms of societal attributes that reach back into history and relate to political and economic events and policies of the times.
Dubos’s account exemplifies the ecological approach to understanding the causes of poor health—in this case, tuberculosis—which is the foundation of the public health orientation. Dubos’s account links the determinants of health in a causal chain that ends in illness, disability, and premature death in the tenements of 19th-century American cities.

Ecological Models and Public Health Practice

The environment, or context, influences the way people live and their health outcomes, for better or for worse. That is, context can have positive or negative impacts on the health of individuals.

As a field, public health attempts to maintain or create healthy contexts in which people live and prevent or dismantle unhealthy contexts—to promote health and reduce morbidity, disability, and premature mortality.

The way in which public health attempts to affect contexts is the story of public health practice, and public health practice reflects public health ecological models. However, the ecological models in use change over time to respond to the health problems predominant in their day and incorporate the knowledge, beliefs, values, and resources of that time and place.

For example, in times and places where infectious diseases are predominant, models reflect the issues required to understand their spread and control. A classic public health model that uses the ecological approach for understanding and preventing disease is the epidemiological triangle with its agent–host–environment triad. The epidemiological triangle (see Figure 1.1) was developed and is used to understand infectious disease transmission and to provide a model for preventing transmission, and thus, infectious disease outbreaks. The three points of the triangle are the agent, host, and environment. The agent is the microbial organism that causes the infectious disease—virus, bacterium, protozoan, or fungus; the host is the organism that harbors the agent; and the environmental aspects included in an epidemiological

![Epidemiological triangle](image_url)
triangle are those factors that facilitate transmission of the agent to the host. These could be aspects of the natural environment, the built environment, or the social environment, including policies. Time is considered in the triangle as the period between exposure to the agent and when the illness occurs; the period that it takes to recover from illness; or the period it takes an outbreak to subside. Prevention measures are those that disrupt the relationship between at least two of the factors in the triangle—agent, host, and environment.

Although there are no explicitly specified environmental factors included in the epidemiological triangle, the environment is central to conceptualizing disease transmission among individuals at risk (the hosts). The environment is the total of factors that enable the agent to infect the host. The environmental factors specified in the model can include, depending upon the disease itself, an array of social and physical attributes that permit the agent to infect the host. For example, Friis and Sellers (1996) write:

The external environment is the sum total of influences that are not part of the host and comprises physical, climatologic, biologic, social, and economic components. The physical environment includes weather, temperature, humidity, geologic formations, and similar physical dimensions. Contrasted with the physical environment is the social environment, which is the totality of the behavioral, personality, attitudinal, and cultural characteristics of a group of people. Both these facets of the external environment have an impact on agents of disease and potential hosts because the environment may either enhance or diminish the survival of disease agents and may serve to bring agent and host into contact. (p. 315)

Because infectious diseases have a single agent, the epidemiological triangle works well as a model for understanding the development of these diseases. In the case of other kinds of diseases or health problems, it is not as helpful because of its emphasis on a single agent, its isolation of the agent from the environment, and its conceptually unspecified environment.

The wheel of causation is another model exemplifying the ecological approach (see Figure 1.2). It has also been used, but not as extensively as the epidemiological triangle, for explaining infectious disease transmission. However, it has some advantages over the epidemiological triangle, as Peterson (1995) notes,

Although it is not used as often as the epidemiological triangle model, it has several appealing attributes . . . For instance, the wheel contains a hub with the host at its center. For our use, humans represent the host. Also, surrounding the host is the total environment divided into the biological, physical, and social environments. These divisions, of course, are not true divisions—there are considerable interactions among the environment types. Although it is a general model, the wheel of causation does illustrate the multiple etiological factors of human infectious diseases. (p. 147)
In general, every ecological model explaining the development of health (or poor health) contains a set of distal causes related to the environment—physical and/or social—and a set of proximal causes related to the individual—primarily behavioral. One of the major issues in developing public health models is where to place the emphasis and, thus, where to intervene to improve health. Is it at the individual level or at the environmental level? This issue is at the heart of public health practice.

Therefore, in the simplest conceptualization of prevention strategies, we have two choices: We can focus our efforts on changing individual behavior directly or on changing the environment in which individual behavior occurs. For example, after examining Dubos’s description of the development of the tuberculosis epidemics of the 1850s in the northeastern cities of the United States, we might decide that tuberculosis should have been prevented by focusing on the sanitary habits of the Irish immigrants, which would have reduced the spread of disease from person to person. These habits might have included handwashing, housekeeping, food preparation practices, and so forth. Changing behavior might have taken the form of encouraging compliance through education or coercing compliance through surveillance and laws.

On the other hand, we might decide that the tuberculosis epidemics should have been prevented by changing the social, political, or physical environments. For instance, if the cities to which the Irish emigrated had provided more healthful housing and working conditions, the Irish immigrants would not have been as susceptible to illness, including tuberculosis. We might have targeted the crowding and other relevant conditions in the neighborhoods where the immigrants came to live. Thus, instead of motivating individuals to change their behavior—through education—we might argue that we could have changed the physical environment to reduce the spread of tuberculosis.

Alternatively, stepping further back in the causal chain, we might decide that the political environment in Ireland should have been the focus of intervention. If England had provided aid to the Irish during the potato blight, the Irish would not have perished in such numbers, and survivors, poor and already weakened by famine, would not have been motivated to emigrate to the United States where they were highly susceptible to tuberculosis. On the
other hand, going back even further, we might decide that the undiversified diet of the Irish should have been the subject of intervention. If the Irish food supply had been diversified, the potato blight would not have become a crisis for the people of that country. Again, this was a political decision on the part of the English. Thus, political strategies might be proposed that would have changed the environment, and, thus, prevented the tuberculosis epidemics of the 1850s in the United States.

The general ecological model is extremely flexible and can assume many different forms. The model becomes differentiated when a specific health problem is identified for intervention in a particular time and place. The ecological models developed beginning in the 1960s in response to the increased importance of chronic diseases made a significant departure from the classic models such as the epidemiological triangle and the wheel of causation (see Figure 1.2) used for infectious disease control and prevention. Let us explain.

Health Promotion and the Ecological Models in Public Health Since 1960

Beginning in the 1960s, the models explaining health status became increasingly limited to the behavioral determinants of health such as smoking, sedentary lifestyle, poor dietary habits, unprotected sexual activity, and failure to use seat belts, which placed the focus of public health interventions on changing individuals rather than their context. The watchwords of this trend were health promotion and disease prevention. As Green (1999) states, 1974 was a turning point when health promotion was accepted as a significant component of health policy. In a classic review of the rise in importance of health promotion, McLeroy, Bibeau, Steckler, and Glanz (1988) summarized the events and initiatives characterizing the ascendance during the 1970s and 1980s:

Within the private sector, this interest in health promotion has led to the extensive development and implementation of health promotion programs in the worksite, increases in the marketing of “healthy” foods, and increased societal interest in fitness. In the public sector this interest has led to national campaigns to control hypertension and cholesterol, the establishment of the Office of Disease Prevention and Health Promotion within the Public Health Service and the Center for Health Promotion and Education within the Centers for Disease Control, the development and implementation of community-wide health promotion programs by both governmental agencies and private foundations, and the establishment and monitoring of the 1990 Objectives for the Nation in health promotion. Within the professions, interest in health promotion led to the publication of the Lalonde Report in Canada, John Knowles’ work on “The Responsibility of the Individual” and the Surgeon General’s report on Health Promotion/Disease Prevention in the United States, and “Health Promotion: A Discussion Document on the Concept and Principles” in Europe. More recently, journals have appeared which are devoted exclusively to articles on health
promotion programs and activities; existing journals both within and outside of traditional public health disciplines have devoted theme issues to health promotion topics; international conferences on health promotion have been held; and health education training programs have begun to focus more extensively on health promotion topics and issues. (p. 352)

The emphasis on health promotion, however, increasingly emphasized public health initiatives at the individual behavior level, rather than the environmental level. Programs to help people stop smoking, lose weight, increase exercise, eat healthier foods, and so forth proliferated, and these programs were predominantly aimed at educating and motivating individuals to change unhealthy behaviors. These initiatives were in contrast to historic interventions such as sewage disposal or food inspection, which emphasized changing the environment, as we will explore in the next chapter.

**PRECEDE–PROCEED and Health Promotion**

By and large, health promotion programs used the now well-known model for conceptualizing community health promotion and planning: Green and Kreuter’s (1991, 1999) PRECEDE–PROCEED model. The PRECEDE–PROCEED model was developed in the 1970s and has been applied since then with a few modifications in the 1990s, which we discuss shortly. PRECEDE stands for Pre-disposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation. Green and Kreuter (1991) define predisposing factors as:

A person’s or population’s knowledge, attitudes, beliefs, values, and perceptions that facilitate or hinder motivation for change. Enabling factors are those skills, resources, or barriers that can help or hinder the desired behavioral changes as well as environmental changes. . . . Reinforcing factors, the rewards received, and the feedback the learner receives from others following adoption of the behavior, may encourage or discourage continuation of the behavior. (pp. 28–29)

PROCEED stands for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development.

As the acronym PRECEDE denotes, the model is oriented toward improving health by changing individuals’ behavior through education, and not toward intervening at the environmental level to change conditions or structures. The question structured by the PRECEDE–PROCEED model is, “Why do people behave badly, that is, engage in unhealthy behaviors?” In addition, the first part of the two-part answer to this question, which is emphasized by PRECEDE–PROCEED, is lack of knowledge. Thus, education about the risks of certain behaviors and the benefits of others is a primary component of health promotion initiatives. These include initiatives to modify unfavorable dietary habits, sedentary lifestyle, substance abuse, smoking, and unsafe practices such as failure to use seat belts or follow safety precautions at work.
The second part of the answer structured by the PRECEDE–PROCEED model is related to attributes of the individual that hinder behavior change, including motivation to change, appraisal of threat, self-efficacy, response efficacy, and so forth. That is, once the knowledge about health behaviors is conveyed, the challenge is to motivate individuals to change their behavior from risky to healthy. Knowledge alone is not sufficient to bring about change in health behaviors. Thus, a major tool of health promotion is the application of psychological theories to understand why people engage in unhealthy behaviors and how to stimulate them to modify these behaviors. A number of the most influential theories applied to health behavior are the Health Belief Model developed by Becker (1974); the Theory of Reasoned Action (Ajzen & Fishbein, 1980); the Protection Motivation Theory (Rogers, 1983); Bandura’s (1986) Social Cognitive Theory, which emphasizes self-efficacy; and Social Learning Theory (Rosenstock, Strecher, & Becker, 1988). These theories underlie the methods used in health promotion initiatives to motivate health behavior change.

The original PRECEDE–PROCEED model was described by Green in 1974. The model visualizes the assumed causal chain, which shows that behavioral problems produce health problems, which then, in turn, produce social problems, such as illegitimacy, unemployment, absenteeism, hostility, alienation, discrimination, riots, and crime. The effect of the environment on individual behavior is assumed under enabling factors such as availability of resources, accessibility, and referrals and reinforcing factors such as attitudes of program personnel. However, note that this is a very restricted environment, which is limited to the immediate setting of the health education program. There is also a nonbehavioral factors box, which contributes to health problems and could contain larger environmental factors, but is not the main focus of the model and is not seen as contributing to behavior problems.

As an example of the use of the PRECEDE–PROCEED model, DeJoy (1996) describes how the model would be applied to workplace safety:

In the PRECEDE model, three sets of diagnostic or behavioral factors drive the development of prevention strategies. Predisposing factors are the characteristics of the individual (beliefs, attitudes, values, etc.) that facilitate or hinder self-protective behavior. Predisposing factors are conceptualized as providing the motivation for behavior. The threat-related beliefs and efficacy expectancies that are prominent features of the value-expectancy models (psychological theories for health behavior) would be included here. Enabling factors refer to objective aspects of the environment or system that block or promote self-protective action. Green and colleagues define enabling factors as “factors antecedent to behavior that allow motivation or aspiration to be realized.” The skill and knowledge necessary to follow prescribed actions would be included here, as would the availability and accessibility of protective equipment and other resources. Most barriers or costs would be classified as enabling factors. Reinforcing factors involve
any reward or punishment that follows or is anticipated as a consequence of the behavior. Performance feedback and the social approval/disapproval received from coworkers, supervisors, and managers would qualify as reinforcing factors in workplace settings. (p. 66)

Clearly, the target for intervention in this example is the worker and his or her motivation to avoid workplace injuries. This orientation is apparent, when the author describes the predisposing factors as “providing the motivation for behavior,” and also includes the worker’s psychological factors such as beliefs about threat and efficacy. Enabling factors “allow motivation or aspiration to be realized” and include the worker’s skill and knowledge. It is plain that the intervention strategy is to induce the practice of safety through education that enables the worker; application of psychological theories that address the worker’s predisposing attitudes, beliefs, and values related to safety practices; and rewards or punishments that reinforce the worker’s safety-related behavior.

Importantly, the environment—in this case, the physical workplace and the people who manage it—is seen as reinforcing and enabling the worker to engage in safety habits, but not as the target of the intervention. Rather, improving workplace safety is focused on motivating the individual worker to practice safety habits, not motivating the employer or the larger society to modify the workplace. The individual worker’s motivation to practice workplace safety is the subject of the intervention, and the worker is viewed as the accountable party.

Also, note that the environment is quite proscribed. Its bounds are the specific workplace itself. The environment, in this example, does not include larger political and economic factors that may affect what occurs within the workplace. For instance, the political and economic factors that impact the availability of protective equipment and other resources required for safety are not considered. Regulations governing safety in the workplace are not considered, nor are the enforcement of regulations. This example is typical of health promotion programs, particularly through the 1990s. The larger environment could certainly be incorporated into the model, but it usually was not.

Why Health Promotion?

The health promotion trend, whereby the target of public health interventions was individuals’ behavior instead of the environment, was, in part, because of the view that the distal causes of poor health—physical and social environmental factors including cultural, economic, and political factors—were too difficult to change.

Also, health promotion was tied to the desire for health care cost containment. Educating individuals about health was seen as a way to make people more self-sufficient in health, engage in self-care, and become better informed consumers of health services. Because of concern about spiraling health care costs in the 1960s and onward, health promotion was presented as a means
to control costs through the demand side (Green, 1999). This can be seen in the proliferation of research studies undertaken to improve health care utilization and decrease unhealthy behaviors through educational interventions for patients/consumers:

It caused them to reason by analogy from medical successes that our scientific quest should be to find the best intervention to achieve a specific type of health-related behavior change. Practitioners and the agencies funding health services and public health research eagerly embraced this search for magic-bullet solutions to the behavioral change problems presented by medical care and public health. A generation of highly controlled randomized trials and fine-grained behavioral research ensued. These tested, by trial and error, specific ways to improve patient compliance. They included ways to reduce broken appointments, educate mothers to restrain their tendency to bring a child to health maintenance organization or pediatric services for each earache or sore throat, improve smoking cessation, and modify a range of specific consumer and self-care behaviors. The targets of the magic bullet interventions were as much those behaviors thought to account for some of the unnecessary and inappropriate uses of health services as those accounting for leading causes of death or disability. (p. 75)

It was also apparent that individual behaviors such as smoking, sedentary lifestyle, and poor dietary habits were highly related to the onset and progression of chronic diseases such as heart disease, pulmonary disease, and diabetes. If risky health behaviors could be changed, it was argued, the incidence of chronic diseases would be reduced. Of course, this is true.

The question, however, is whether trying to motivate individuals to change their behavior—through education, incentives, and disincentives—is the most effective and just means of accomplishing this goal. Is placing accountability for behavior change onto the individual, without changing the environment in which that behavior occurs, realistic and fair?

Criticisms of Health Promotion

Placing the locus of accountability for poor health on the individual is one of the major criticisms of the health promotion movement. Viewing the individual’s behavior as the problem to be “fixed,” rather than the context in which that behavior occurs, is seen as “blaming the victim.” Under this view, the context of people’s lives structures their health behaviors to a large degree, and so blaming individuals for having poor health behaviors is ineffective and unfair. For example, poor people and those of minority groups
often live in neighborhoods with supermarkets that carry limited amounts of healthy foods, especially fruits and vegetables. Their shelves predominate, instead, with high-fat, high-sodium snack foods that have little nutritional value (Moore & Roux, 2006). Does the fairer and more effective public health intervention, aimed at improving the diet of people in such neighborhoods, target the residents themselves or the supermarkets? These are the kinds of questions that arise from the debate over the PRECEDE–PROCEED model.

Not surprisingly, beginning in the 1980s, the pendulum began to swing back to a focus on environmentally targeted interventions and an interest in understanding the interaction between individuals and their environment. Because of the “blaming-the-victim” argument, as well as the recognition that health education was not as effective as it had once been thought to be, interest in alternatives to the health promotion approach intensified. As Green himself noted in 1999, “The dominant emphasis has shifted from psychological and behavioral factors, which lend themselves to precise measure, to more difficult to measure and control factors, such as social, cultural, and political ones” (Green & Kreuter, 1999, p. 8). Further:

In 1986, the First International Conference on Health Promotion produced the Ottawa Charter, which helped reorient policy, programs, and practices away from these proximal risk factors. The shift that followed was to the more distal risk factors in time, space, or scope, which we shall call risk conditions. These also influence health, either through the risk factors or by operating directly on human biology over time, but they are less likely than risk factors to be under the control of the individual at risk. (p. 10)

Consistent with the pendulum swing, Green and Kreuter revised the PRECEDE–PROCEED model (see Figure 1.3) in 1991 to place more emphasis on the context of behavior. With respect to incorporating environmental influences, the model now contains a box labeled environment, which notably both influences and is influenced by behavior and lifestyle. This change in the PRECEDE–PROCEED model makes it in keeping with the general ecological model, which assumes that individuals are affected by their environment. In addition, the model now includes a policy regulation organization factor, which impacts the enabling factors and, through these, the environment. The main features and causal assumptions of the 1974 PRECEDE–PROCEED model remain the same—predisposing, reinforcing, and enabling factors affect behavior and lifestyle, which, in turn, impact health.

In 1999, Green and Kreuter made minor modifications to the PRECEDE–PROCEED model, and enlarged the role of the environment in their description of the factors influencing behavior. The risk factors and risk conditions, together with factors predisposing, enabling, and reinforcing them, are referred to in the PRECEDE–PROCEED model collectively as the determinants of health.

These include adequate housing; secure income; healthful and safe community and work environment; enforcement of policies and
regulations controlling the manufacture, marketing, labeling, and sale of potentially harmful products; and the use of these products (such as alcohol and tobacco) where they can harm others. (p. 10)

Although the revised model placed more emphasis on the environment, the focus was still on providing a blueprint for changing the individual’s behavior through education and relying on psychological theories for understanding how to motivate behavioral change. The context was identified in the model as necessary to achieve individual behavioral changes. However, in practice,
changes to the context within health promotion programs were usually still limited and proscribed to the immediate setting. They did not aim to change underlying social structures or other larger environmental factors. See, for example, Lieberman, Golden, and Earp (2013) for a discussion.

Population Health and Reemphasis of the Social Environment in Public Health Models

At the same time that health promotion was coming under attack, the population health approach was introduced and began to gain followers in the field of public health. Stirred by antipathy toward the emphasis on interventions that used education and psychologically based strategies to motivate individuals to change their behavior rather than changing the context or structure in which behavior occurs, this approach to public health focused on the distal social environment—power, wealth, and status—as the root cause of health problems. The evidence supporting this approach is the large body of research on disparities or inequalities in health status between the rich and the poor, the powerful and powerless, and those of high social status and those of low status. Incontrovertible findings that an individual’s social status, wealth, and power have a profound influence on his or her chances of being healthy underwrite the population health approach to public health. The Whitehall study was one of the first to demonstrate what has become a consistent finding—people who are structurally disadvantaged are far more likely than the advantaged to have poor health.

Studies have asked, “Why do some people exercise and others do not?” “Why do some people eat nutritious foods and others do not?” “Why do some people lead sedentary lives and others do not?” “Why do some communities have support groups for behavior change and others do not?” “Why do some communities have opportunities for exercise and relaxation and others do not?” “Why are some communities free from toxic substances in the environment and others are not?” The answers are in the unequal distribution of power, wealth, and status that give the advantaged the opportunities and resources to live in healthier environments, engage in healthier behaviors, and have access to better health care.

As Marmot (2005) states,

> The gross inequalities in health that we see within and between countries present a challenge to the world. That there should be a spread of life expectancy of 48 years among countries and 20 years or more within countries is not inevitable. A burgeoning volume of research identifies social factors (i.e., wealth, power, and status) at the root of much of these inequalities in health. Social determinants are relevant to communicable and non-communicable disease alike. (p. 1099)

The population health approach has led to studies such as the following by Pickard, Miller, and Kirkpatrick (2009) that offer explanations for undesirable health behaviors in terms of the social context of the individual. That is, the social context is viewed as having a causal impact on health behaviors.
Social determinants of health are widely described, but few researchers have more than cursory contact with those whose lives fall into the most impoverished, epidemiological categories. Framing the problems as inappropriate emergency room visits and non-compliance with treatment regimens sheds little light on the choices driving such behaviors. Drawing on 11 years of working continually among residents of a highly diverse and grindingly poor urban neighborhood, this paper examines the meanings people assign to their health behaviors. It presents a new “care-seeking typology” based on a content analysis of accounts shared in nearly 400 in-depth neighborhood interviews. When combined with close observations of patients in a small university-affiliated, community-based safety-net clinic, 10 health seeker types emerge. Each type is illustrated with authentic stories rarely surfaced by traditional scientific methods and validated through reviews by community participants. While several resulting composites mirror frequently cited stereotypes of downtrodden lives, others challenge prevailing beliefs about why and how the poor make health care decisions. Not surprisingly, money plays a central role in care seeking among the population studied. However, the connection is frequently misunderstood by health providers and policymakers, with frustratingly predictable results. Opportunities for more successful therapeutic engagement emerge from this new mapping of social perceptions. (Pickard et al., 2009)

The population health perspective is leading to more complex public health models that integrate distal and proximal social factors, physical environmental factors, and behavioral factors to predict disease, disability, and premature death. Health behaviors are viewed as patterned by the social environment, not “free-standing” (Chan, Gordon, Chong, & Alter, 2008; Purslow et al., 2008). For example, a recent study of the original Whitehall participants who have been followed for 24 years (Stringhini et al., 2010) investigated the role of health behaviors in the relationship between socioeconomic position and mortality. The behaviors studied included smoking, alcohol consumption, diet, and physical activity. The authors found that “there was an association between socioeconomic position and mortality that was substantially accounted for by adjustment for health behaviors, particularly when the behaviors were assessed repeatedly.” (p. 1159)

Among champions of population health, the commitment to social justice is at the heart of public health’s promise.

Health disparities/inequalities include differences between the most advantaged group in a given category—e.g., the wealthiest, the most powerful racial/ethnic group—and all others, not only between the best and worst-off groups. Pursuing health equity means pursuing the elimination of such health disparities/inequalities. (Braveman, 2006, p. 167)
Everyone, not only the rich, the powerful, or those with social standing, is entitled to the conditions that produce health. It is in the tradition of public health to advocate for those who have unequal access to opportunities and resources in society as well as those with advantages, following in the footsteps of the public health engineering era, when people in all stations of life were provided with clean water, sewage and garbage disposal, and a clean food supply in the cities of industrializing nations.

Summary

Over the last 50 years, the emphasis of public health initiatives on behavior, rather than on environment, became widespread. Even though the ecological approach of public health views the individual as embedded in a physical and social environment and affected by it, the health promotion orientation led to an emphasis on behavior and a de-emphasis on the environment—both physical and social. The recent President’s Cancer Panel (2010) report provides an example of the divergence in orientation that has occurred and still exists. The report, Reducing Environmental Cancer Risk: What We Can Do Now, is unlike previous president’s reports, which focused on individual behaviors, diagnosis, and treatment rather than the risk of environmental exposures. The 2010 report found that “a growing body of research documents myriad established and suspected environmental factors linked to genetic, immune, and endocrine dysfunction that can lead to cancer and other diseases.” The panel advised that the “true burden of environmentally induced cancers has been grossly underestimated,” and that the current estimates of 2% of all cancers caused by environmental toxins and 4% by occupational exposures is outdated. Of the more than 80,000 chemicals used in the United States today, only a few hundred have been tested for health effects. Environmental contaminants come from industrial and manufacturing processes, agriculture, household products, medical technologies, military practices, and the natural environment. The report argues that the problem has not been addressed adequately by the National Cancer Program, which has focused on individual behaviors, screening, diagnosis, and treatment. It finds the current regulatory approach reactionary rather than precautionary—a substance’s danger must be demonstrated incontrovertibly before action is taken to reduce exposure to it. Therefore, the “public bears the burden of proving that a given environmental exposure is harmful” (President’s Cancer Panel, p. ii).

The still-existing tension between those who emphasize behavioral and those who emphasize environmental causes is demonstrated in the reaction to the 2010 President’s Report. The panel urged the president to act on its findings, but reaction to the report was critical from Michael Thun, Vice President of Epidemiology and Surveillance Research at the American Cancer Society, who tried to bring the focus back to behavior. As reported in The New York Times (Grady, 2010), Dr. Thun stated that the report was “unbalanced by its implication that pollution is the major cause of cancer.” Further,

... Suggesting that the risk is much higher, when there is no proof, may divert attention from things that are much bigger causes of...
cancer, like smoking. “If we could get rid of tobacco, we could get rid of 30 percent of cancer deaths,” he said, adding that poor nutrition, obesity, and lack of exercise are also greater contributors to cancer risk than pollution.

This discussion exemplifies some of the complexities of taking a primary prevention approach to health, that is, to prevent health problems from beginning. There are many choices made when determining how to improve or maintain health, and one is the choice between an individual or environmental-level intervention. Given the premise of the ecological model—that individuals are embedded in an environment, which they both influence and are influenced by—both components of the model are relevant. Within the ecological model, both the individual and the context are potential sites of public health interventions, and both have been employed throughout the history of public health. For example, in the early part of the 20th century, there were interventions that focused on the individual level—teaching and encouraging individuals in immigrant communities to engage in certain health behaviors, such as handwashing, that prevent infectious diseases—and those that focused on the environmental level, notably the environmental engineering interventions that brought clean water, safe food supply, and sanitary disposal of waste to these communities and also prevented the spread of infectious diseases. The emphasis on environmental over individual-level interventions changes over time, as we have seen in the discussion of public health models since 1960. Neither approach is ever entirely abandoned, but in different eras, one may be emphasized over the other. Indeed, a study of tuberculosis control in the 19th and 20th centuries led Fairchild and Oppenheimer (1998) to argue for a more nuanced approach to public health practice in which strategies that address both individual and environmental causes of disease with broad and targeted interventions are employed: “If the relative contribution of different interventions and factors is to be sorted out, pursuit of monocausal explanations for the retreat of TB, like monotypic intervention, is insufficient” (p. 1113).

These and other decisions about how to promote and maintain health in populations go to the heart of public health practice. Public health, as a field, plans and initiates prevention activities—primary, secondary, and tertiary. However, many important choices about these activities translate the public health mission into public health practice. Several choices are central to the actuality of public health:

- What health problems are addressed?
- Where are interventions targeted—environmental, individual, or multilevel?
- If targeted at the environmental level, are interventions focused on distal or proximal factors?
- Are methods voluntary or coercive?
- Are activities public or private enterprises?
- If private, are activities nonprofit or profit-making?
To clarify these choices and how they impact practice, we can examine the provision of clean water in the United States. Although water treatment has been practiced throughout human history as far back as 2000 BCE in ancient Greece and India, before the mid-1850s, the motivation to treat water, usually with some form of filtering, was to improve taste and reduce turbidity. In the mid-1800s, the need to treat water to prevent infectious disease outbreaks was beginning to be understood, even before we knew that water could contain microorganisms that caused these diseases. How water became associated with specific diseases is the story of one of the most famous public health achievements—John Snow’s identification, through application of epidemiological principles, of the Broad Street pump as the source of the 1853 cholera epidemic in London. Here is the story as told by Summers (1989):

When a wave of Asiatic cholera first hit England in late 1831, it was thought to be spread by “miasma in the atmosphere.” By the time of the Soho outbreak 23 years later, medical knowledge about the disease had barely changed, though one man, Dr. John Snow, a surgeon (actually an anesthesiologist) and pioneer of the science of epidemiology, had recently published a report speculating that it was spread by contaminated water—an idea with which neither the authorities nor the rest of the medical profession had much truck. Whenever cholera broke out—which it did four times between 1831 and 1854—nothing whatsoever was done to contain it, and it rampaged through the industrial cities, leaving tens of thousands dead in its wake. The year 1853 saw outbreaks in Newcastle and Gateshead as well as in London, where a total of 10,675 people died of the disease. In the 1854 London epidemic the worst-hit areas at first were Southwark and Lambeth. Soho suffered only a few, seemingly isolated, cases in late August. Then, on the night of the 31st, what Dr. Snow later called “the most terrible outbreak of cholera which ever occurred in the kingdom” broke out.

It was as violent as it was sudden. During the next three days, 127 people living in or around Broad Street died. Few families, rich or poor, were spared the loss of at least one member. Within a week, three-quarters of the residents had fled from their homes, leaving their shops shuttered, their houses locked and the streets deserted. Only those who could not afford to leave remained there. It was like the Great Plague all over again.

By 10 September, the number of fatal attacks had reached 500 and the death rate of the St Anne’s, Berwick Street and Golden Square subdivisions of the parish had risen to 12.8 percent—more than double that for the rest of London. That it did not rise even higher was thanks only to Dr. John Snow.

Snow lived in Frith Street, so his local contacts made him ideally placed to monitor the epidemic which had broken out on his doorstep. His previous researches had convinced him that cholera, which, as he had noted, “always commences with disturbances of the
functions of the alimentary canal,” was spread by a poison passed from victim to victim through sewage-tainted water; and he had traced a recent outbreak in South London to contaminated water supplied by the Vauxhall Water Company—a theory that the authorities and the water company itself were, not surprisingly, reluctant to believe. Now he saw his chance to prove his theories once and for all, by linking the Soho outbreak to a single source of polluted water.

From day one he patrolled the district, interviewing the families of the victims. His research led him to a pump on the corner of Broad Street and Cambridge Street, at the epicenter of the epidemic. “I found,” he wrote afterwards, “that nearly all the deaths had taken place within a short distance of the pump.” In fact, in houses much nearer another pump, there had only been 10 deaths—and of those, five victims had always drunk the water from the Broad Street pump, and three were schoolchildren, who had probably drunk from the pump on their way to school.

Dr. Snow took a sample of water from the pump, and, on examining it under a microscope, found that it contained “white, flocculent particles.” By 7 September, he was convinced that these were the source of infection, and he took his findings to the Board of Guardians of St James’s Parish, in whose parish the pump fell.

Though they were reluctant to believe him, they agreed to remove the pump handle as an experiment. When they did so, the spread of cholera dramatically stopped. [Actually the outbreak had already lessened for several days.] (pp. 113–117)

Knowledge about disease-causing microorganisms increased dramatically during the remainder of the 19th century because of advances in the microscope and other instruments. Cholera, typhoid, hepatitis, and other infectious diseases were understood to be waterborne and controllable through water treatment. Because of the tremendous death toll from such diseases, by the advent of the 20th century, water purification was considered an important public health issue, and methods to provide clean water were underway. The filtration systems of the past had been somewhat, but not entirely, effective against waterborne diseases. The first widely used method to eliminate waterborne disease organisms was chlorination. In 1970, public health concerns shifted from waterborne illnesses caused by microorganisms, to water pollution from pesticide residues, industrial waste, and organic chemicals. Regulations and water treatment plants were developed to respond to this source of water contamination as well (Jesperson, 2004).

In the United States, as in many other countries, providing clean water was viewed as a public good or utility. As a result, government at every level invested in water purification systems, and water treatment became a staple public health service. Government regulations set standards for water used for human consumption, and clean water was provided throughout the country by public or publicly regulated organizations. The exceptions were for people who lived in remote areas and obtained their water from private wells.

With respect to public health choices about how to improve health, this approach to preventing waterborne infectious diseases may be viewed as an
archetypical primary prevention; purifying water supplies is intended to prevent infectious diseases such as cholera, typhoid, and hepatitis from occurring at all. As for the strategy chosen to prevent waterborne infectious diseases, water treatment systems such as those in the United States are environmental-level interventions. Our systems of preventing exposure to unclean water do not depend on individual behaviors such as boiling water or adding chlorine to water for individual use. Under the environmental-level approach that we have followed, clean water is delivered to individuals through a system that is planned, installed, monitored, and maintained by an organization, irrespective of an individual user’s actions. Using and/or creating clean water is not the responsibility of the individual. In addition, the water treatment organization in the United States is generally a public utility, not a private enterprise.

HEALTH IMPACT PYRAMID

The health impact pyramid developed by Frieden (2010) provides a very useful framework for integrating these ideas into public health practice (see Figure 1.4).

“A 5-tier pyramid best describes the impact of different types of public health interventions and provides a framework to improve health. At the base of this pyramid, indicating interventions with the greatest potential impact, are efforts to address socio-economic determinants of health. In ascending order are interventions that change the context to make individuals’ default decisions healthy, clinical interventions that require limited contact but confer long-term protection, and ongoing direct clinical care, and health education and counseling.” (Frieden, 2010, p. 590)

Note that the author accepts the population health perspective that structural inequality embodied in socioeconomic factors is the level with the most potential to improve health—a primary prevention strategy. Also note that the second level—changing the context—is a primary prevention strategy, which includes provision of clean water and safe food, as well as passage of laws that prevent injuries and exposure to disease-producing agents. Interventions at the top tiers are a mix of primary, secondary, and tertiary prevention “designed to help individuals, rather than entire populations, but they could theoretically have a large population impact if universally and effectively applied. In practice, however, even the best programs at the pyramid’s higher levels achieve limited public health impact, largely because of their dependence on long-term individual behavior change.” (Frieden, 2010, p. 591)

Since its publication in 2010, the Health Impact Pyramid has begun to be used as a tool for describing different types of public health interventions. For example, an American Heart Association publication states, “The improvement in socioeconomic status (first level) is a worthy goal for any society and the AHA Community Guide fully recognizes the critical importance of the social determinants of CVD” (Pearson et al., 2013). The report further argues that a combination of policies and programs at all five tiers will be the best way to improve health outcomes in populations.
In the following chapters, we discuss the practice of public health. We examine what public health practitioners actually do and how their practice relates to the mission of public health and to primary, secondary, and tertiary prevention. So far, we have discussed public health in the ideal. However, the actual practice of public health does not always attain the ideal. In the next set of chapters, we discuss the public health system as it is currently practiced in the United States and its historical origins. This involves discussing the components of the public health system, including organization, financing, management, and performance, as well as the health problems that are addressed by public health. In this review, we will see how public health practice today in the United States compares to the ideal of “assuring conditions in which people can be healthy.”

**THE PROSPECTS FOR PUBLIC HEALTH**

In the final chapter of the book, we discuss the prospects for the field of public health.

The promise of public health rests on social justice—everyone is entitled to the conditions that can maintain health. In practice, public health is a loose confederation of organizations and public agencies that are often not in a position to maintain or create the conditions that lead to health. Therefore, what are the prospects for public health? What conditions can public health affect? There is evidence that public health practice is on the cusp of change that will return the field to more politically oriented action aimed at changing underlying

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**FIGURE 1.4** The Health Impact Pyramid.

structures of society that maintain inequalities throughout the world in morbidity, disability, and premature death between rich and poor, powerful and powerless, and high and low status. As Marmot (2005) writes:

Health status, therefore, should be of concern to policy makers in every sector, not solely those involved in health policy. As a response to this global challenge, WHO (World Health Organization) is launching a Commission on Social Determinants of Health, which will review the evidence, raise societal debate, and recommend policies with the goal of improving health of the world’s most vulnerable people. A major thrust of the commission is turning public health knowledge into political action. (p. 1099)

On the other hand, the pressure to continue emphasizing interventions that motivate people to change their behavior through traditional health promotion has wide support because it does not challenge existing power structures. It will be easier to maintain a focus on motivating individuals to change their own behavior, rather than taking on the difficult task of providing, in the broadest sense, the conditions in which people can be healthy. These issues are considered in the final chapter.

Another issue considered is who will provide public health services. Much of the work of public health is done by the public sector, but as the IOM emphasized in *The Future of the Public’s Health in the 21st Century*, public health extends beyond government to encompass, “the efforts, science, art, and approaches used by all sectors of society (public, private, and civil society) to assure, maintain, protect, promote, and improve the health of the people” (IOM, 2003). Consistent with this view, public health “can be seen as an ideology, a profession, a movement, or a set of actions, but not as a single scientific discipline” (Savitz, Poole, & Miller, 1999, p. 1158).

For example, we, in the United States, where access to clean water is guaranteed by public utilities through environmental-level structures that deliver potable water to individuals in their homes, worksites, and public places, may assume that our system was the only way the goal of providing water free from disease-producing agents could have been achieved. However, this is not the case. Other models have been developed and are being tried throughout the world, mostly in poor countries and poor communities. They include water systems developed by the private sector such as in Bolivia, where the government licensed water distribution in the 1990s to private companies, headed by Bechtel (Salzman, 2006). Alternate approaches include individual-level strategies whereby people are responsible for filtering their own water using small-scale technologies such as the UV Waterworks, a portable, low-maintenance, energy-efficient water purifier, which uses ultraviolet light to render viruses and bacteria harmless (National Academy of Engineering, 2010). They include the Acumen Fund water initiatives that provide potable water in poor countries using market-based concepts and private investment without government help (Acumen Fund,
2010). These alternative strategies to providing potable water that is free from water-borne disease agents illustrate the variety of ways that public health problems can be addressed.

However, the questions that must be raised about the selection of strategies to achieve public health goals are related to their effectiveness, efficiency, and equity.

The purpose of this book is to open the field of public health to those new to it. Many complexities are not discussed in this attempt to make the overall values, goals, and practices of the field accessible to those unfamiliar with public health. With broad strokes, we hope to develop in the reader an appreciation of public health and an interest in learning more about the challenges and complexities of providing conditions in which people can be healthy.

STUDY QUESTIONS

Q: What is the most important difference between the fields of medicine and public health?

Q: What do we mean by the determinants of health?

Q: What does research indicate is the impact of each determinant on human health?

Q: What are the major differences among the Epidemiological Triangle, the PRECEDE-PROCEED model, and the Health Impact Pyramid?

Q: What types of public health interventions are considered to be most effective?

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