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Learning Objectives

Upon completion of this chapter, the student should be able to:

1. Describe basic historical concepts of public health;
2. Analyze these concepts and their applicability to current and newly emerging public health problems;
3. Discuss the principles and component elements of the New Public Health.

INTRODUCTION

The development of public health from its ancient and recent roots, especially in the past several centuries, is a continuing process, with evolutionary and sometimes dramatic leaps forward, and important continuing and new challenges for personal and population health and well-being. Everything in the New Public Health is about preventing avoidable disease, injuries, disabilities, and death while promoting and maximizing a healthy environment and optimal conditions for current and future generations. Thus, the New Public Health addresses overall health policy, resource allocation, as well as the organization, management, and provision of medical care and of health systems in general within a framework of overall social policy and in a community, state, national, transnational, and global context.

The study of history (see Chapter 1) helps us to understand the process of change, to define where we came from and where we are going. It is vital to recognize and understand change in order to deal with radical transformations in direction that occur as a result of changing demography and epidemiology, new science, evolving best practices in public health and clinical medicine, and above all inequalities in health resulting from societal system failures and social and economic factors. Health needs will continue to develop in the context of environmental, demographic and societal adjustments, with knowledge gained from social and physical sciences, practice, and economics. For the coming generations, this is about not only the quality of life, but the survival of society itself.

CONCEPTS OF PUBLIC HEALTH

Over the past century there have been many definitions of public health and health for all. Mostly they represent visions and ideals of societal and global aspirations. This chapter examines the very base of the New Public Health, which encompasses the classic issues of public health with recognition of the advances made in health promotion and the management of health care systems as integral components of societal efforts to improve the health of populations and of individuals. What follows in succeeding chapters will address the major concepts leading to modern and comprehensive elements of public health. Inevitably, concepts of public health continue to evolve and to develop both as a philosophy and as a structured discipline. As a professional field, public health requires specialists trained with knowledge and appreciation of its evolution, scientific advances, concepts, and best practices, old and modern. It demands sophisticated professional and managerial skills, the ability to address a problem, reasoning to define the issues, and to advocate, initiate, develop, and implement new and revised programs. It calls for profoundly humanistic values and a sense of responsibility towards protecting and improving the health of communities and every individual. In the twenty-first century, this set of values was well expressed in the Human Development Index agreed to by 160 nations (Box 2.1).

Public health is a multidimensional field and therefore multidisciplinary in its workforce and organizational needs. It is based on scientific advances and application of best practices as they evolve, and includes many concepts, including holistic health, first established in ancient times.

BOX 2.1 Human Development Index 2010

“People are the real wealth of a nation”. With these words the 1990 Human Development Report (HDR) began a forceful case for a new approach to thinking about development. That the objective of development should be to create an enabling environment for people to enjoy long, healthy and creative lives may appear self-evident today. But that has not always been the case. A central objective of the HDR for the past 20 years has been to emphasize that development is primarily and fundamentally about people.

Source: Overview: Human Development Report 2010. 20th anniversary edition. The real wealth of nations: pathways to human development. New York: United Nations Development Programme; 2010. Available at: http://hdr.undp.org/en/media/HDR_2010_EN_Complete_reprint.pdf [Accessed 16 January 2011].
The discussion will return to the diversity of public health throughout this chapter and book many times.

In previous centuries, public health was seen primarily as a discipline which studies and implements measures for control of communicable diseases, primarily by sanitation and vaccination. The sanitary revolution, which preceded the development of modern bacteriology, made an enormous contribution to improved health, but many other societal factors including improved nutrition, education, and housing were no less important for population health. Maternal and child health, occupational health, and many other aspects of a growing public health network of activities played important roles, as have the physical and social environment and personal habits of living in determining health status. In recent decades recognition of the importance of women’s health and health inequalities associated with many high-risk groups in the population have seen both successes and failures in addressing their challenges. Male health issues have received less attention, apart from issues associated with specific diseases, or those of healthy military personnel.

The scope of public health has changed along with growth of the medical, social, and public health sciences, public expectations, and practical experience. Taken together, these have all contributed to changes in the concepts and causes of disease. Health systems that fail to adjust to changes in fundamental concepts of public health suffer from immense inequity and burdens of preventable disease, disability, and death. This chapter examines expanding concepts of public health, leading to the development of a New Public Health.

Public health has evolved as a multidisciplinary field that includes the use of basic and applied science, education, social sciences, economics, management, and communication skills to promote the welfare of the individual and the community. It is greater than the sum of its component elements and includes the art and politics of the funding and coordination of the wide diversity of community and individual health services.

The concept of the interdependence of health in body and in mind has ancient origins. They continue to be fundamental to individuals and societies, and part of the fundamental rights of all humans to have knowledge of healthful lifestyles and to have access to those measures of good health that society alone is able to provide, such as immunization programs, food and drug safety and quality standards, environmental and occupational health, and universal access to high-quality primary and specialty medical and other vital health services. This holistic view of balance and equilibrium may be a renaissance of classical Greek and biblical traditions, applied with the broad new knowledge and experience of public health and medical care of the nineteenth, twentieth, and the early years of the twenty-first centuries as change continues to challenge our capacity to adapt.

The competing nineteenth-century germ and miasma theories of biological and environmental causation of illness each contributed to the development of sanitation, hygiene, immunization, and understanding of the biological and social determinants of disease and health. They come together in the twenty-first century encompassed in a holistic New Public Health addressing individual and population health needs. Medicine and public health professionals both engage in organization and in direct care services. These all necessitate an understanding of the issues that are included in the New Public Health, how they evolved, interact, are put together in organizations, and are financed and operated in various parts of the world in order to understand changes going on before our eyes.

Great success has been achieved in reducing the burden of disease with tools and concepts currently at our disposal. The idea that this is an entitlement for everyone was articulated in the Health for All concept of Alma-Ata in 1978. The health promotion movement emerged in the 1970s and showed dramatically effective results in managing the new human immunodeficiency virus (HIV) pandemic and in tackling smoking and other risk factors for non-communicable diseases (NCDs). A Health in All policy concept emerged in 2006 promoting the concept that health should be a basic component of all public and private policies to achieve the full potential of public health and eliminate inequalities associated with social and economic conditions.

Profound changes are taking place in the world population, and public health is crucial to respond accordingly: mass migration to the cities, fewer children, extended life expectancy, and the increase in the population of older people who are subject to more chronic diseases and disabilities in a changing physical, social, and economic climate. Health systems are challenged with continuing development of new medical technologies and related reforms in clinical practice, while experiencing strong influences of pharmaceuticals and the medicalization of health, with prevention and health promotion less central in priorities and resource allocation.

Globalization of health has many meanings: international trade, improving global communications, and economic changes with increasing flows of goods, services, and people. Ecological and climate change bring droughts, hurricanes, Arctic meltdown, and rising sea levels. Globalization also has political effects, with water and food shortages, terrorism, and economic distress affecting billions of people. In terms of health, disease can spread from one part of the world to others, as in pandemics or in a quiet spread such as that of West Nile Fever moving from its original Middle Eastern natural habitat to the Americas and Europe, or severe acute respiratory syndrome (SARS), which spread with lightning speed from Chinese villages to metropolitan cities such as Toronto, Canada. It can also mean that the NCDs characteristic of the industrialized countries are now recognized as the leading causes of death in low- and middle-income countries, associated with diet, activity levels, and smoking, which are themselves pandemic risk factors.
The potential for global action in health can also be dramatic. The eradication of smallpox was a stunning victory for public health. The campaign to eradicate poliomyelitis is succeeding even though the end-stage is fraught with setbacks, and measles elimination has turned out to be more of a challenge than was anticipated a decade ago, with resurgence in countries thought to have it under control. Global health policies have also made the achievements of public–private partnerships of great importance, particularly in vaccination and acquired immunodeficiency syndrome (AIDS) control programs. There have been failures as well, with very limited progress in human resources development of the public health workforce in low-income countries.

The New Public Health is necessarily comprehensive in scope and it will continue to evolve as new technologies and scientific discoveries – biological, genetic, and sociological – reveal more methods of disease control and health promotion. It relates to or encompasses all community and individual activities directed towards improving the environment for health, reducing factors that contribute to the burden of disease, and fostering those factors that relate directly to improved health. Its programs range broadly from immunization, health promotion, and child care, to food labeling and fortification, as well as to the assurance of well-managed, accessible health care services. A strong public health system should have adequate preparedness for natural and human-made disasters, as seen in the recent tsunamis, hurricanes, biological or other attacks by terrorists, wars, conflicts, and genocidal terrorism (Box 2.2).

The concepts of health promotion and disease prevention are essential and fundamental elements of the New Public Health. Parallel scientific advances in molecular biology, genetics and pharmacogenomics, imaging, information technology, computerization, biotechnology, and nanotechnology hold great promise for improving the productivity of the health care system. Advances in technology with more effective and less expensive drug and vaccine development, with improved safety and effectiveness, and fewer adverse reactions, will over time greatly increase efficiency in prevention and treatment modalities.

The New Public Health is important as a conceptual base for training and practice of public health. It links classical topics of public health with adaptation in the organization and financing of personal health services. It involves a changed paradigm of public health to incorporate new advances in political, economic, and social sciences. Failure at the political level to appreciate the role of public health in disease control holds back many societies in economic and social development. At the same time, organized public health systems need to work to reduce inequities between and inside countries to ensure equal access to care. It also demands special attention through health promotion activities of all kinds at national and local societal levels to provide access for groups with special risks and needs to medical and community health care with the currently available and newly developing knowledge and technologies.

The great gap between available capabilities to prevent and treat disease and actually reaching all in need is still the
source of great international and internal national inequities. These inequities exist not only between developed and developing countries, but also within transition countries, mid-level developing countries, and those newly emerging with rapid economic development. The historical experience of public health will help to develop the applications of existing and new knowledge and societal commitment to social solidarity in implementation of the new discoveries for every member of the society, despite socioeconomic, ethnic, or other differences.

Political will and leadership in health, adequate financing, and organization systems in the health setting are crucial to furthering health as an objective with defined targets, supported by well-trained staff for planning, management, and monitoring the population health and functioning of health systems. Political leadership and professional support are both indispensable in a world of limited resources, with high public expectations and the growing possibilities of effectiveness of public health programs. Well-developed information and knowledge management systems are required to provide the feedback and information needed for good management. It includes responsibilities and coordination at all levels of government. Non-governmental organizations (NGOs) and participation of a well-informed media and strong professional and consumer organizations also have significant roles in furthering population health. No less important are clear designations of responsibilities of the individual for his or her own health, and of the provider of care for humane, high-quality professional care. The complexities and interacting factors are suggested in Figure 2.1, with the classic host–agent–environment triad.

**EVOLUTION OF PUBLIC HEALTH**

Many changes have signaled a need for transformation towards the New Public Health. Religion, although still a major political and policy-making force in many countries, is no longer the central organizing power in most societies. Organized societies have evolved from large extended families and tribes to rural societies, cities, regions, and national governments. With the growth of industrialized urban communities, rapid transport, and extensive trade and commerce in multinational economic systems, the health of individuals and communities has become more than just a personal, family, and/or local problem. An individual is not
only a citizen of the village, city, or country in which he or she lives, but a citizen of a “global village”.

The agricultural revolutions and international explorations of the fifteenth to seventeenth centuries that increased food supply and diversity were followed only much later by knowledge of nutrition as a public health issue. The scientific revolution of the seventeenth to nineteenth centuries provided the basics to describe and analyze the spread of disease and the poisonous effects of the industrial revolution, including crowded living conditions and pollution of the environment with serious ecological damage. In the latter part of the twentieth century, a new agricultural “green revolution” had a great impact in reducing human deprivation internationally, yet the full benefits of healthier societies are yet to be realized in the large populations living in abject poverty in sub-Saharan Africa, South-East Asia, and other parts of the world. Global water shortages can be addressed with new methods of irrigation, water conservation and the application of genetic sciences to food production, and issues of economics and food security are of great importance to a still growing world population with limited supplies. Further, food production capacity can and must be enlarged to meet current food insecurity, rising expectations of developing nations, and population growth. The sciences of agriculture-related fields, including genetic sciences and practical technology, will be vital to human progress in the coming decades.

These and other societal changes discussed in Chapter 1 have enabled public health to expand its potential and horizons, while developing its pragmatic and scientific base. Organized public health in the twentieth century proved effective in reducing the burden of infectious diseases and has contributed to improved quality of life and longevity by many years. In the last half-century, chronic diseases have become the primary causes of morbidity and mortality in the developed countries and increasingly in developing countries. Growing scientific and epidemiological knowledge increases the capacity to deal with these diseases. Many aspects of public health can only be influenced by the behavior of and risks to the health of individuals. These require interventions that are more complex and relate to societal, environmental, and community standards and expectations as much as to personal lifestyle. The dividing line between communicable and non-communicable diseases changes over time. Scientific advances have shown the causation of chronic conditions by infectious agents and their prevention by curing the infection, as in Helicobacter pylori and peptic ulcers, and in prevention of cancer of the liver and cervix by immunization for hepatitis B and human papillomavirus (HPV), respectively.

Chronic diseases have come to the center stage in the “epidemiological transition”, as infectious diseases came under increasing control. This, in part, has created a need for reform in the funding and management of health systems due to rapidly rising costs, aging of the population, the rise of obesity and diabetes and other chronic conditions, mushrooming therapeutic technology, and expanding capacity to deal with public health emergencies. Reform is also needed in international assistance to help less developed nations build the essential infrastructure to sustain public health in the struggle to combat AIDS, malaria, tuberculosis (TB), and the major causes of preventable infant, childhood, and motherhood-related deaths.

The nearly universal recognition of the rights of people to have access to health care of acceptable quality by international standards is a challenge of political will and leadership backed up by adequate staffing with public health-trained staff and organizations. The challenges of the current global economic crisis are impacting social and health systems around the world. The interconnectedness of managing health systems is part of the New Public Health. Setting the priorities and allocating resources to address these challenges requires public health training and orientation of the professionals and institutions participating in the policy, management, and economics of health systems. Conversely, those who manage such institutions are recognizing the need for a wide background in public health training in order to fulfill their responsibilities effectively. Concepts such as objectives, targets, priorities, cost-effectiveness, and evaluation have become part of the New Public Health agenda. An understanding of how these concepts evolved will help the future health provider or manager to cope with the complexities of mixing science, humanity, and effective management of resources to achieve higher standards of health, and to cope with new issues as they develop in the broad scope of the New Public Health for the twenty-first century, in what Breslow called the “Third Public Health Era” of long and healthy quality of life (Box 2.3).

HEALTH AND DISEASE

Health can be defined from many perspectives, ranging from statistics on mortality, life expectancy, and morbidity rates to idealized versions of human and societal perfection, as in the World Health Organization’s (WHO’s) founding charter. The

BOX 2.3 Breslow: The Continuing Epidemiological Transition

First Public Health Era – the control of communicable diseases.
Second Public Health Era – the rise and fall of chronic diseases.
Third Public Health Era – the development of long and high-quality life.

Source: Breslow L. 2006. Health measurement in the third era of health. Am J Public Health 2006;96:17–9.
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Box 2.4 Health Policy Evolution Since the 1960s

- Risk factors for chronic disease – 1960s
- Social and behavioral sciences – social epidemiology – from 1960s
- Health Field Concept (Lalonde – Health Field Concept) – 1974
- Health for All (Alma Ata Declaration) – 1978
- Declining mortality from stroke, CHD, trauma – from the 1960s
- Health promotion – from the 1980s
- Advances in drugs, vaccines and diagnostics
- Control of infectious diseases – antibiotics, vaccines, eradication of smallpox, advances in control of polio, measles, and other childhood diseases
- Rapid increase in costs of care: health system reform
- Health targets, e.g., Healthy People 2000 and 2010
- Health in All Policies – from 1990s
- Screening, nutrition, and immunization to prevent cancers
- Inequalities in health – from 2000
- Health systems reform – universal coverage and new organizational systems
- Identification of infectious causes of non-communicable diseases – from 1990s
- Genetic epidemiology – from 1990s
- Millennium Development Goals – 2001–2015
- Recognition of non-communicable diseases as central issues in low- and medium-income as well as high-income countries
- Health target planning for Healthy People 2020 in the USA and Health 2020 in Europe

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preamble to the constitution of the WHO, as adopted by the International Health Conference in New York in 1946 and signed by the representatives of 61 states, entered into force on 7 April 1948, with the widely cited definition: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. This definition is still important conceptually as an ideal accepted as fundamental to public policy over the years.

A more operational definition of health is a state of equilibrium of the person with the biological, physical, and social environment, with the object of maximum functional capability. Health is thus seen as a state characterized by anatomical, physiological, and psychological integrity, and an optimal functional capability in the family, work, and societal roles (including coping with associated stresses), a feeling of well-being, and freedom from risk of disease and premature death. Deviances in health are referred to as unhealthy and constitute a disease nomenclature.

There are many interrelated factors in disease and in their management through what is now called risk reduction. In 1878, Claude Bernard described the phenomenon of adaptation and adjustment of the internal milieu of the living organism to physiological processes. This concept is fundamental to medicine. It is also central to public health because understanding the spectrum of events and factors between health and disease is basic to the identification of contributory factors affecting the balance towards health, and to seeking the points of potential intervention to reverse the imbalance.

As described in Chapter 1, from the time of Hippocrates and Galen, diseases were thought to be due to humors and miasma or emanations from the environment. This was termed the miasma theory, and while without a direct scientific explanation, it was acted upon in the early to mid-nineteenth century and promoted by leading public health theorists including Florence Nightingale, with practical and successful measures to improve sanitation, housing, and social conditions, and having important results in improving health conditions. The competing germ theory developed by pioneering nineteenth-century epidemiologists (Panum, Snow, and Budd), scientists (Pasteur, Cohn, and Koch), and practitioners (Lister and Semmelweis) led to the science of bacteriology and a revolution in practical public health measures. The combined application of the germ (agent–host–environment) and miasma theories (social and sanitary environment) has been the basis of classic public health, with enormous benefits in the control of infectious and other diseases or harmful conditions.

The revolutionary changes occurring since the 1960s have brought about a decline in cardiovascular and cancer mortality, and conceptual changes such as Health for All and Health in All to bring health issues to all policies at both governmental and individual levels. The concepts of public health advanced with the 1974 Marc Lalonde Health Field Concept (New Perspectives on the Health of Canadians, 1974), stating that health was the result of the physical and social environment, lifestyle and personal habits, genetics, as well as organization and provision of medical care.

The Lalonde report was a key concept leading to ideas advanced at the Alma-Ata conference on primary care held in 1978 and more explicitly in the development of the basis for health promotion as articulated in the Ottawa Charter of 1986 on Health Promotion. This marked the beginning of a whole new aspect of public health, which proved itself in addressing with considerable success the epidemic of HIV and cardiovascular diseases.

In the USA, the Surgeon General’s reports of 1964 on smoking and health, and of 1979 defining health targets as national policy promoted the incorporation of “management by objectives” from the business world applied to the health sector (see Chapter 12). This led to Healthy People USA 2000 and later versions, and the United Nations (UN) Millennium Development Goals (MDGs), aimed primarily at the middle- and low-income countries (Box 2.4). The identification of infectious causes of cancers of the liver and cervix established a new paradigm in epidemiology, and genetic epidemiology has important potential for public health and clinical medicine.
Chapter 2 Expanding the Concept of Public Health

The Host–Agent–Environment Paradigm

In the basic host–agent–environment paradigm, a harmful agent comes through a sympathetic environment into contact with a susceptible host, causing a specific disease. This idea dominated public health thinking until the mid-twentieth century. The host is the person who has or is at risk for a specific disease. The agent is the organism or direct cause of the disease. The environment includes the external factors which influence the host, his or her susceptibility to the agent, and the vector which transmits or carries the agent to the host from the environment. This explains the causation and transmission of many diseases. This paradigm (Figure 2.2), in effect, joins together the contagion and miasma theories of disease causation. A specific agent, a method of transmission, and a susceptible host are involved in an interaction, which are central to the infectivity or severity of the disease. The environment can provide the carrier or vector of an infective (or toxic) agent, and it also contributes factors to host susceptibility; for example, unemployment, poverty, or low education level.

The Expanded Host–Agent–Environment Paradigm

The expanded host–agent–environment paradigm widens the definition of each of the three components (Figure 2.3), in relation to both acute infectious and chronic non-infectious disease epidemiology. In the latter half of the twentieth century, this expanded host–agent–environment paradigm took on added importance in dealing with the complex of factors related to chronic diseases, now the leading causes of disease and premature mortality in the developed world, and increasingly in developing countries.

Interventions to change host, environmental, or agent factors are the essence of public health. In infectious disease control, the biological agent may be removed by pasteurization of food products or filtration and disinfection (chlorination) of water supplies to prevent transmission of waterborne disease. The host may be altered by immunization to provide immunity to a specific infective organism. The environment may be changed to prevent transmission by destroying the vector or its reservoir of the disease.

A combination of these interventions can be used against a specific risk factor, toxic or nutritional deficiency, infectious organism, or disease process.

Vaccine-preventable diseases may require both routine and special activities to boost herd immunity to protect the individual and the community. For other infectious diseases for which there is no vaccine (e.g., malaria), control involves a broad range of activities including case finding and treatment to improve the individual’s health and to reduce the reservoir of the disease in the population, and other measures such as bed nets to reduce exposure of the host to vector mosquitoes, as well as vector control to reduce the mosquito population. TB control requires not only case finding and treatment, but understanding the contributory factors of social conditions, diseases with TB as a secondary condition (substance abuse and AIDS), agent resistance to treatment, and the inability of patients or carriers to complete treatment without supervision. Sexually transmitted infections (STIs) which are not controllable by vaccines require a combination of personal behavior change, health education, medical care, and skilled epidemiology.

With non-infectious diseases, intervention is even more complex, involving human behavior factors and a wide range of legal, administrative, and educational issues. There may be multiple risk factors, which have a compounding effect in disease causation, and they may be harder to alter than infectious diseases factors. For example, smoking in and of itself is a risk factor for lung cancer, but exposure to asbestos fibers has a compounding effect. Preventing exposure to the compounding variables may be easier than smoking cessation. Reducing trauma morbidity and mortality is equally problematic.
The identification of a single specific cause of a disease is of great scientific and practical value in modern public health, enabling such direct interventions as the use of vaccines or antibiotics to protect or treat individuals from infection by a causative organism, toxin, deficiency condition, or social factor. The cumulative effects of several contributing or risk factors in disease causation are also of great significance in many disease processes, in relation to infectious diseases such as nutritional status as for chronic diseases such as the cardiovascular group.

The health of an individual is affected by risk factors intrinsic to that person as well as by external factors. Intrinsic factors include the biological ones that the individual inherits and those life habits he or she acquires, such as smoking, overeating, or engaging in other high-risk behaviors. External factors affecting individual health include the environment, the socioeconomic and psychological state of the person, the family, and the society in which he or she lives. Education, culture, and religion are also contributory factors to individual and community health.

There are factors that relate to health of the individual in which the society or the community can play a direct role. One of these is provision of medical care. Another is to ensure that the environment and community services include safety factors that reduce the chance of injury and disease, or include protective measures; for example, fluoridation of a community water supply to improve dental health, and seat-belt or helmet laws to reduce motor vehicle injury and death. These modifying factors may affect the response of the individual or the spread of an epidemic (see Chapter 3).

Assuming a natural state of “wellness” – i.e., optimal health or a sense of well-being, function, and absence of disease – a disease process may begin with the onset of a disease, infectious or non-infectious, following a somewhat characteristic pattern of “incubation” described by clinicians and epidemiologists. Preclinical or predisposing events may be detected by a clinical history, with determination of risk including possible exposure or presence of other risk factors. Interventions, before and during the process, are intended to affect the later course of the disease.

The clinical course of a disease, or its laboratory or radiological findings, may be altered by medical or public health intervention, leading to the resolution or continuation of the disease with fewer or less severe secondary sequelae. Thus, the intervention becomes part of the natural history of the disease. The natural history of an infectious disease in a
population will be affected by the extent of prior vaccination or previous exposure in the community. Diseases particular to children are often so because the adult population is immune from previous exposure or vaccinations. Measles and diphtheria, primarily childhood diseases, now affect adults to a large extent because they are less protected by naturally acquired immunity or are vulnerable when their immunity wanes naturally or as a result of inadequate vaccination in childhood.

In chronic disease management, high costs to the patient and the health system accrue where preventive services or management are inadequate, not yet available, or inaccessible or where there is a failure to apply the necessary interventions. The progress of diabetes to severe complications such as cardiovascular, renal, and ocular disease is delayed or reduced by good management of the condition, with a combination of smoking cessation, diet, exercise, and medications with good medical supervision. The patient with advanced chronic obstructive pulmonary disease or congestive heart failure may be managed well and remain stable with smoking avoidance, careful management of medications, immunizations against influenza and pneumonia, and other prevention-oriented care needs. Where these are not applied or if they fail, the patient may require long and expensive medical and hospital care. Failure to provide adequate supportive care will show up in ways that are more costly to the health system and will prove more life-threatening to the patient. The goal is to avoid where possible the necessity for tertiary care, substituting tertiary prevention, i.e., supportive rehabilitation to maximum personal function and maintaining a stable functional status.

As in an individual, the phenomenon of a disease in a population may follow a course in which many factors interplay, and where interventions affect the natural course of the disease. The epidemiological patterns of an infectious disease can be assessed in their occurrence in the population or their mortality rates, just as they can for individual cases. The classic mid-nineteenth-century description of measles in the Faroe Islands by Panum showed the transmission and the epidemic nature of the disease as well as the protective effect of acquired immunity (see Chapter 1). Similar, more recent breakthroughs in medical, epidemiological, biological, and social sciences have produced enormous benefit for humankind as discussed throughout this text, with some examples. These include the eradication of smallpox and in the coming years, poliomyelitis, measles, leprosy, and other dreaded diseases known for millennia; the near-elimination of rheumatic heart disease and peptic ulcers in the industrialized countries; vast reduction in mortality from stroke and coronary heart disease (CHD); and vaccines (against hepatitis B and HPV) for the prevention of cancers. These and other great achievements of the twentieth and early part of the twenty-first centuries hold great promise for humankind in the coming decades, but great challenges lie ahead as well. The biggest challenge is to bring the benefits of known public health capacity to the poorest population of each country and the poorest populations globally. In developed countries a major challenge is to renew efforts of public health capacity to bear on prevention of chronic conditions such as diabetes and obesity, considered to be at pandemic proportions; and the individual and societal effects of mental diseases.

In public health today, fears of a pandemic of avian influenza are based on transmission of avian or other animal-borne (zoonotic) prions or viruses to humans and then their adaptation permitting human-to-human spread. With large numbers of people living in close contact with many animals (wild and domestic fowl), such as in China and South-East Asia, and rapid transportation around the world, the potential for global spread of disease is almost without historical precedent. Indeed, many human infectious diseases are zoonotic in origin and transferred from natural wildlife reservoirs to humans either directly or via domestic or other wild animals, such as from birds to chickens to humans in avian influenza. Monitoring or immunization of domestic animals requires a combination of multidisciplinary zoonotic disease management strategies, public education and awareness, and veterinary public health monitoring and control. Rift Valley Fever, equine encephalitis, and more recently SARS and avian influenza associated with bird-borne viral disease which can affect humans, each show the terrible dangers of pandemic diseases. Ebola virus is probably sustained between outbreaks among fruit bats, or as recently suggested wild or domestic pigs, and may become a major threat to public health as human case fatality rates decline, meaning that patients and carriers, or genetic drift of the virus with possible airborne transmission, may spread this deadly disease more widely than in the past (see Chapter 4).

**SOCIETY AND HEALTH**

The health of populations, like the health of individuals, depends on societal factors no less than on genetics, personal risk factors, and medical services. Social inequalities in health have been understood and documented in public health over the centuries. The Chadwick and Shattuck reports of 1840–1850 documented the relationship of poverty and bad sanitation, housing, and working conditions with high mortality, and ushered in the idea of social epidemiology. Political and social ideologies thought that the welfare state, including universal health care systems of one type or another, would eliminate social and geographic differences in health status and this is in large part true.

**Health Insurance Systems**

From the introduction of compulsory health insurance in Germany in the 1880s to the failed attempt in the USA at
national health insurance in 1995 (see Chapters 1, 10 and 13) and the more recent achievements of US President Obama in 2010–2011, social reforms to deal with inequalities in health have focused on improving access to medical and hospital care. Almost all industrialized countries have developed such systems, and the contribution of these programs to improve health status has been an important part of social progress, especially since World War II.

But even in societies with universal access to health care, people of lower socioeconomic status (SES) suffer higher rates of morbidity and mortality from a wide variety of diseases. The Black Report (Douglas Black) in the UK in the early 1980s pointed out that the class V population (unskilled laborers) had twice the total and specific mortality rates of the class I population (professional and business) for virtually all disease categories, ranging from infant mortality to death from cancer. The report was shocking because all Britons have had access to the comprehensive National Health Service (NHS) since its inception in 1948, with access to a complete range of services at no cost at time of service, close relations to their general practitioners, and good access to specialty services. These findings initiated reappraisals of the social factors that had previously been regarded as the academic interests of medical sociologists and anthropologists and marginal to medical care. More recent studies and reviews of regional, ethnic, and socioeconomic differentials in patterns of health care access, morbidity, and mortality indicate that health inequalities are present in all societies including the UK, the USA, and others, even with universal health insurance or services.

Health Promotion

The Ottawa Charter on Health Promotion in 1986 placed a new paradigm before the world health community that recognized social and political factors as no less important than health that traditional medical and sanitary public health measures. These concepts helped the world health community to cope with new problems such as HIV/AIDS – for which there was neither a medical cure nor a vaccine to prevent the disease. Its control came to depend in the initial decades almost entirely on education and change in lifestyles, until the advent of the antiretroviral drugs in the 1990s. There is still no viable vaccine.

Although the epidemiology of cardiovascular disease shows the direct relationship of the now classic risk factors of stress, smoking, poor diet, and physical inactivity, differences in mortality from cardiovascular disease between different classes among British civil servants are not entirely explainable by these factors. The differences are also affected by social and economic issues that may relate to the psychological needs of the individual, such as the degree of control people have over their own lives. Blue-collar workers have less control over their lives, their working life in particular, than their white-collar counterparts, and have higher rates of CHD mortality than higher social classes. Other work shows the effects of migration, unemployment, drastic social and political change, and binge drinking, along with protective effects of healthy lifestyle, religiosity, and family support systems in cardiovascular diseases.

Social conditions affect disease distribution in all societies. In the USA and Western Europe, TB has re-emerged as a significant public health problem in urban areas partly because of high-risk population groups, owing to poverty and alienation from society, as in the cases of homelessness, drug abuse, and HIV infection. In countries of Eastern Europe and the former Soviet Union, the recent rise in TB incidence has resulted from various social and economic factors in the early 1990s, including the large-scale release of prisoners. In both cases, diagnosis and prescription of medication are inadequate, and the community at large becomes at risk because of the development of antibiotic-resistant strains of tubercle bacillus readily spread by inadequately treated carriers, acting as human vectors.

Studies of SES and health are applicable and valuable in many settings. In Alameda County, California, differences in mortality between black and white population groups in terms of survival from cancer became insignificant when controlled for social class. A 30-year follow-up study of the county population reported that low-income families in California are more likely than those on a higher income to have physical and mental problems that interfere with daily life, contributing to further impoverishment.

Studies of the association between indicators of SES and recent screening in the USA, Australia, Finland, and elsewhere showed that lower SES women use less preventive care such as Papanicolaou (Pap) smears for cervical cancer than women of higher SES, despite having greater risk for cervical cancer. Many factors in SES inequalities are involved, including transportation and access to primary care, differences in health insurance coverage, educational levels, poverty, high-risk behaviors, social and emotional distress, feeling a lack of control over one’s own life, employment, occupation, and inadequate family or community social support systems. Many barriers exist owing to difficulties in access and the lack of availability of free or low-cost medical care, and the absence or limitations of health insurance is a further factor in the socioeconomic gradient.

Social Determinants of Health

The recognition that health and disease are influenced by many factors, including social inequalities, plays a fundamental role in the New Public Health paradigm. Health care systems need to take into account economic, social, physical, and psychological factors that otherwise will limit the effectiveness of even the best medical care. The health
system includes access to competent and responsible primary care as well as by the wider health system, including health promotion, specific prevention and population-based health protection. The paradigm of the host-agent-environment triad (Figures 2.2 and 2.3) is profoundly affected by the wider context. The sociopolitical environment and organized efforts at intervention affect the epidemiological and clinical course of disease of the individual. Medical care is essential, as is public health, but the persistent health inequalities seen in most regions and countries require societal attention. Success or failure in improving the conditions of life for the poor, and other vulnerable “risk groups”, affect national or regional health status and health system performance. The health system is meant to reduce the occurrence or bad outcome of disease, either directly by primary prevention or treatment as secondary prevention or by maximum rehabilitation as tertiary prevention, or equally important indirectly by reducing community or individual risk factors.

The World Health Organization Commission on Inequities (2007; see Box 2.5) 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 at the root of much of these inequalities in health. Social determinants are relevant to communicable and non-communicable disease alike. 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, The WHO Commission on Social Determinants of Health reviewed the evidence, raised societal debate, and recommend policies with the goal of improving health of the world’s most vulnerable people. A major challenge put forward by the Commission is turning public health knowledge into political action.”

The effects of social conditions on health can be partly offset by interventions intended to promote healthful conditions; for example, improved sanitation, or through good-quality primary and secondary health services, used efficiently and effectively made available to all. The approaches to preventing disease or its complications may require physical changes in the environment, such as removal of the Broad Street pump handle to stop the cholera epidemic in London, or altering diets as in Goldberger’s work on pellagra. Some of the great successes of public health have been and continue to be low technology. Examples, among many others, include insecticide-impregnated bednets and other vector control measures, oral rehydration solutions, treatment and cure of peptic ulcers, exercise and diet to reduce obesity, hand washing in hospitals (and other health facilities), community health workers, and condoms and circumcision for the prevention of STIs, including HIV and cancer of the cervix.

The societal context in terms of employment, social security, female education, recreation, family income, cost of living, housing, and homelessness is relevant to the health status of a population. Income distribution in a wealthy country may leave a wide gap between the upper and lower socioeconomic groups, which affects health status. The media have great power to sway public perception of health issues by choosing what to publish and the context in which to present information to society. Modern media may influence an individual’s tendency to overestimate the risk of some health issues while underestimating the risk of others, ultimately influencing health choices, such as occurred with public concern regarding false claims of an association between the measles–mumps–rubella (MMR) vaccine and autism in the UK (see the Wakefield effect, Chapter 4). The New Public Health has an intrinsic responsibility for advocacy of improved societal conditions in its mission to promote optimal community health.

MODES OF PREVENTION

An ultimate goal of public health is to improve health and to prevent widespread disease occurrence in the population and in an individual. The methods of achieving this are wide and varied. When an objective has been defined in
Health Promotion

Health promotion is the process of enabling people and communities to increase control over factors that influence their health, and thereby to improve their health (adapted from the Ottawa Charter of Health Promotion, 1986; Box 2.7). Health promotion is a guiding concept involving activities intended to enhance individual and community health and well-being (Box 2.8). It seeks to increase involvement and control by the individual and the community in their own health. It acts to improve health and social welfare, and to reduce specific determinants of diseases and risk factors that adversely affect the health, well-being, and productive capacities of an individual or society, setting targets based on the size of the problem but also the feasibility of successful intervention, in a cost-effective way. This can be through direct contact with the patient or risk group, or act indirectly through changes in the environment, legislation, or public policy. Control of AIDS relies on an array of interventions that promote change in sexual behavior and other contributory risks such as sharing of needles among drug users, screening of blood supply, safe hygienic practices in health care settings, and education of groups at risk such as teenagers, sex workers, migrant workers, and many others. Control of AIDS is also a clinical problem in that patients need antiretroviral therapy (ART), but this becomes a management and policy issue for making these drugs available and at an affordable price for the poor countries most affected.

This is an example of the challenge and effectiveness of health promotion and the New Public Health.

Health promotion is a key element of the New Public Health and is applicable in the community, the clinic or hospital, and in all other service settings. Some health promotion activities are government legislative and

BOX 2.6 Modes of Prevention

- Health promotion – fostering national, community, and individual knowledge, attitudes, practices, policies, and standards conducive to good health; promoting legislative, social, or environmental conditions; promoting knowledge and practices for self-care that reduce individual and community risk; and creating a healthful environment. It is directed toward action on the determinants of health.
- Health protection – activities of official health departments or other agencies empowered to supervise and regulate food hygiene, community and recreational water safety, environmental sanitation, occupational health, drug safety, road safety, emergency preparedness, and many other activities to eliminate or reduce as much as possible risks of adverse consequences to health.
- Primary prevention – preventing a disease from occurring, e.g., vaccination to prevent infectious diseases, advice to stop smoking to prevent lung cancer.
- Secondary prevention – making an early diagnosis and giving prompt and effective treatment to stop progress or shorten the duration and prevent complications from an already existing disease process, e.g., screening for hypertension or cancer of cervix and colorectal cancer for early case finding, early care and better outcomes.
- Tertiary prevention – stopping progress of an already occurring disease, and preventing complications, e.g., in managing diabetes and hypertension to prevent complications; restoring and maintaining optimal function once the disease process has stabilized, e.g., promoting functional rehabilitation after stroke and myocardial infarction with long-term follow-up care.

Source: Adapted from Last JM. A dictionary of public health. New York: Oxford University Press, 2007.

BOX 2.7 The Ottawa Charter: Health Promotion

Health promotion (HP) is the process of enabling people to increase control over, and to improve their health.

HP represents a comprehensive social and political process, and not only embraces actions directed at strengthening the skills and capabilities of individuals.

HP also undertakes action directed towards changing social, environmental, and economic conditions so as to alleviate their impact on public and individual health.

Health promotion is the process of enabling people to increase control over the determinants of health and thereby improve their health. Participation is essential to sustain health promotion action.

The Ottawa Charter identifies three basic strategies for health promotion. These are advocacy for health to create the essential conditions for health indicated above; enabling all people to achieve their full health potential; and mediating between the different interests in society in the pursuit of health.

These strategies are supported by five priority action areas as outlined in the Ottawa Charter for health promotion:
- Build healthy public policy.
- Create supportive environments for health.
- Strengthen community action for health.
- Develop personal skills.
- Reorient health services.

Source: Ottawa Charter for Health Promotion. Geneva: WHO; 1986. Available at: http://www.who.int/hpr/NPH/docs/HP_glossary_en.pdf [Accessed 21 November 2012].
Chapter 2 Expanding the Concept of Public Health

BOX 2.8 Elements of Health Promotion

1. Address the population as a whole in health-related issues, in everyday life as well as people at risk for specific diseases.
2. Direct action to risk factors or causes of illness or death.
3. Undertake activist approach to seek out and remedy risk factors in the community that adversely affect health.
4. Promote factors that contribute to a better condition of health of the population.
5. Initiate actions against health hazards, including communication, education, legislation, fiscal measures, organizational change, community development, and spontaneous local activities.
6. Involve public participation in defining problems and deciding on action.
7. Advocate relevant environmental, health, and social policy.
8. Encourage health professional participation in health education and health advocacy.
9. Advocate for health based on human rights and solidarity.
10. Invest in sustainable policies, actions, and infrastructure to address the determinants of health.
11. Build capacity for policy development, leadership, health promotion practice, knowledge transfer and research, and health literacy.
12. Regulate and legislate to ensure a high level of protection from harm and enable equal opportunity for health and well-being for all people.
13. Partner and build alliances with public, private, nongovernmental, and international organizations and civil society to create sustainable actions.
14. Make the promotion of health central to the global development agenda.

Source: Adapted from World Health Organization. Ottawa Charter for Health Promotion. Geneva: WHO; 1986; Bangkok Charter for Health Promotion in a Globalized World, 2005; other conferences are available at: http://www.who.int/healthpromotion/conferences/en/ [Accessed 25 May 2012].

regulatory interventions such as mandating the use of seat belts in cars, requiring that children be immunized to attend school, declaring that certain basic foods must have essential minerals and vitamins added to prevent nutritional deficiency disorders in vulnerable population groups, and mandating that all newborns should be given prophylactic vitamin K to prevent hemorrhagic disease of the newborn. Setting food and drug standards and raising taxes on cigarettes and alcohol to reduce their consumption are also part of health promotion. Promoting a healthy lifestyle is a major known obesity-preventive activity. Health promotion is provided by organizations and people with varied professional backgrounds working towards common goals of improvement in the health and quality of individual and community life. Initiatives may come from government with dedicated allocation of funds to address specific health issues, from donors, or from advocacy or community groups or individuals to promote a specific or general cause in health.

Raising awareness to inform and motivate people about their own health and lifestyle factors that might put them at risk requires teaching young people about the dangers of sexually transmitted diseases, smoking, and alcohol abuse to reduce risks associated with their social behavior. It might include disseminating information on healthy nutrition; for example, the need for folic acid supplements for women of childbearing age and multiple vitamins for elderly, as well as the elements of a healthy diet, compliance with immunization recommendations, compliance with screening programs, and many others. Community and peer group attitudes and standards affect individual behavior. Health promotion endeavors to create a climate of knowledge, attitudes, beliefs, and practices that are associated with better health outcomes.

International conferences following on from the Ottawa Charter were held in Adelaide in 1988, Sundsvall in 1991, Jakarta in 1999, Mexico in 2000, Bangkok in 2005, and Nairobi in 2009. The principles of health promotion have been reiterated and have influenced public policy regarding public health as well as the private sector.

Health promotion has a track record of proven success in numerous public health issues where a biomedical solution was not available. The HIV/AIDS pandemic from the 1980s until the late 1990s had no medical treatment and control measures relied on screening, education, lifestyle changes, and supportive care. Health promotion brought forward multiple interventions, from condom use and distribution, to needle exchanges for intravenous drug users, to male circumcision in high-prevalence African countries. Medical treatment was severely limited until ART was developed.

The success of ART also depends on a strong element of health promotion in widening the access to treatment and the success of medications to reduce transmission, most remarkably in reducing maternal–fetal transmission (see Chapter 4). Similarly, in the battle against cardiovascular diseases, health promotion was an instrumental factor in raising public awareness of the importance of management of hypertension and smoking reduction, dietary restraint, and physical exercise. The success of massive reductions in stroke and CHD mortality is as much the result of health promotion as of improved medical care (see Chapter 5).

Health Protection

The character of public health carries with it a “good cop, bad cop” dichotomy. The “good cop” is persuasive and educational trying to convince people to do the right thing in looking after their own health: diet, exercise, smoking cessation, and others. On the other side, the “bad cop” role is regulatory and punitive. Public health has a serious responsibility and role in the enforcement of laws and regulation to protect the public health. Some of these are restrictive
of individual rights that may damage other people or are requirements based on strong evidence of benefits to population health. Readily accepted are food and drug standards, such as pasteurization of milk, and iodization of salt; requirements to drive on the right-hand side of the road (except in some countries such as the UK), to wear seat belts and for motorcyclists to wear safety helmets; and not smoking in public places.

Enforcement of these and similar statutory or regulatory requirements is vital in a civil society to protect the public from health hazards and to protect people from harm and exploitation by unscrupulous manufacturers and marketing. Cigarette advertising and sponsorship of sports events by tobacco companies are banned in most upper income countries. The use of transfats in food manufacturing and baking is now banned and salt reduction is being promoted and even mandated in many US local authorities to reduce cardiovascular disease. Advertising of unhealthy snack foods on children’s television programs and during child-watching hours is commonly restricted. Banning high-sugar soda drink distribution in schools is a successful intervention to reduce the current child obesity epidemic. Melamine use in milk powders and baby formulas, which caused widespread illness and death of infants in China, is now banned and a punishable offence for manufacture or distribution in China and worldwide.

Examples of this aspect of public health are mentioned throughout this text, especially in Chapters 8 and 9 on nutrition, and environmental and occupational health, respectively. The regulatory enforcement function of public health is sometimes controversial and portrayed as interference with individual liberty. Fluoridation of community water supplies is an example where aggressive lobby groups opposing this safe and effective public health measure are still common. This is discussed in Chapter 7.

Equally important is the public health policy issue of resource allocation and taxation for health purposes. Taxation is an unpopular measure that governments must employ and enforce in order to do the public’s business. The debate over the Patient Protection and Affordable Care Act 2010 (PPACA or “Obamacare”), discussed elsewhere in this and other chapters, shows how bitter the arguments can become, yet the goal of equality of access to health care cannot be denied as a public good, demonstrably contributing to the health of the nation.

### Primary Prevention

Primary prevention refers to those activities that are undertaken to prevent disease or injury from occurring at all. Primary prevention works with both the individual and the community. It may be directed at the host to increase resistance to the agent (such as in immunization or cessation of smoking), or at environmental activities to reduce conditions favorable to the vector for a biological agent, such as mosquito vectors of malaria or dengue fever. Landmark examples include the treatment and prevention of scurvy among sailors based on James Lind’s findings in a classic clinical epidemiological study in 1747, and John Snow’s removal of the handle from the Broad Street pump to stop a cholera epidemic in London in 1854 (see Chapter 1).

Primary prevention includes elements of health protection such as ensuring water, food and drug, and workplace safety; chlorination of drinking water to prevent transmission of waterborne enteric diseases; pasteurization of milk to prevent gastrointestinal diseases; mandating wearing seat belts in motor vehicles to prevent serious injury and death in road crashes; and reducing the availability of firearms to reduce injury and death from intentional, accidental, or random violence. It also includes direct measures to prevent diseases, such as immunization to prevent polio, tetanus, pertussis, and diphtheria.

Health promotion and health protection blend together as a group of activities that reduce risk factors and diseases through many forms of intervention such as changing smoking legislation or preventing birth defects by fortification of flour with folic acid. Prevention of HIV transmission by needle exchange for intravenous drug users, promoting condom usage, and promoting male circumcision in Africa, and the distribution of condoms and clean needles for HIV-positive drug users are recent examples of primary prevention associated with health promotion programs.

Primary prevention also includes activities within the health system that can lead to better health. This may mean, for example, setting standards and to reduce hospital infections, and ensuring that doctors not only are informed of appropriate immunization practices and modern prenatal care or screening programs for cancer of the cervix, colon, and breast, but also are aware of their vital role in preventing cardiovascular and other non-communicable diseases. In this role, the health care provider serves as a teacher and guide, as well as a diagnostician and therapist. Like health promotion, primary prevention does not depend on health care providers alone; health promotion works to increase individual and community consciousness of self-care, mainly by raising awareness and information levels and empowering the individual and the community to improve self-care, to reduce risk factors, and to live healthier lifestyles.

### Secondary Prevention

Secondary prevention is early diagnosis and management to prevent complications from a disease. Public health interventions to prevent the spread of disease include the identification of sources of the disease and the implementation of steps to stop it, as shown in Snow’s closure of the Broad Street pump. Secondary prevention includes steps
to isolate cases and treat or immunize contacts so as to pre-
vent further cases of meningitis or measles, for example, 
in outbreaks. For current epidemics such as HIV/AIDS, 
primary prevention is largely based on education, abstin-
ence from any and certainly risky sexual behavior, cir-
cumcision, and treatment of patients in order to improve 
their health and to reduce the risk of spread of HIV. For 
high-risk groups such as intravenous drug users, needle-
exchange programs reduce the risk of spread of HIV, and 
hepatitis B and C. Distribution of condoms to teenagers, 
military personnel, truck drivers, and commercial sex 
workers helps to prevent the spread of STIs and AIDS in 
schools and colleges, as well as among the military. The 
promotion of circumcision is shown to be effective in 
reducing the transmission of HIV and of HPV (the caus-
ative organism for cancer of the cervix).

All health care providers have a role in secondary 
prevention; for example, in preventing strokes by early 
identification and adequate care of hypertension. The 
child who has an untreated streptococcal infection of the 
throat may develop complications which are serious and 
potentially life-threatening, including rheumatic fever, 
rheumatic valvular heart disease, and glomerulonephritis. 
A patient found to have elevated blood pressure should 
be advised about continuing management by appro-
priate diet and weight loss if obese, regular physical exer-
cise, and long-term medication with regular follow-up 
by a health provider in order to reduce the risk of stroke 
and other complications. In the case of injury, competent 
emergency care, safe transportation, and good trauma 
care may reduce the chance of death and/or permanent 
handicap. Screening and high-quality care in the commu-
nity prevent complications of diabetes, including heart, 
kidney, eye, and peripheral vascular disease. They can 
also prevent hospitalizations, amputations, and strokes, 
thus lengthening and improving the quality of life. Health 
care systems need to be actively engaged in secondary 
prevention, not only as individual doctors’ services, but 
also as organized systems of care.

Public health also has a strong interest in promoting high-
quality care in secondary and tertiary care hospital centers in 
such areas of treatment as acute myocardial infarction, stroke, 
and injury in order to prevent irreversible damage. Measures 
include quality of care reviews to promote adequate long-
term postmyocardial infarction care with aspirin and beta-
blockers or other medication to prevent or delay recurrence 
and second or third myocardial infarctions. The role of high-
quality transportation and care in emergency facilities of hos-
pitals in public health is vital to prevent long-term damage 
and disability; thus, cardiac care systems including publicly 
available defibrillators, catheterization, the use of stents, and 
bypass procedures are important elements of health care pol-
icy and resource allocation, which should be accessible not 
only in capital cities but also to regional populations.

Tertiary Prevention

Tertiary prevention involves activities directed at the host 
or patient, but also at the social and physical environment 
in order to promote rehabilitation, restoration, and mainte-
nance of maximum function after the disease and its com-
plications have stabilized. The person who has undergone a 
cerebrovascular accident or trauma will reach a stage where 
active rehabilitation can help to restore lost functions and 
prevent recurrence or further complications. The public 
health system has a direct role in the promotion of disability-
friendly legislation and standards of building, housing, 
and support services for chronically ill, handicapped, and 
elderly people. This role also involves working with many 
governmental social and educational departments, but also 
with advocacy groups, NGOs, and families. It may also 
include the promotion of disability-friendly workplaces and 
social service centers.

Treatment for conditions such as myocardial infarction or 
a fractured hip now includes early rehabilitation in order to 
promote early and maximum recovery with restoration to opti-
mal function. The provision of a wheelchair, walkers, modi-
fications to the home such as special toilet facilities, doors, 
and ramps, along with transportation services for paraplegics 
are often the most vital factors in rehabilitation. Public health 
agencies work with groups in the community concerned with 
promoting help for specific categories of risk group, disease, 
or disability to reduce discrimination. Community action is 
often needed to eliminate financial, physical, or social bar-
rriers, promote community awareness, and finance special 
equipment or other needs of these groups. Close follow-up 
and management of chronic disease, physical and mental, 
require home care and ensuring an appropriate medical regi-
men including drugs, diet, exercise, and support services. The 
follow-up of chronically ill people to supervise the taking of 
medications, monitor changes, and support them in maximiz-
ing their independent capacity in activities of daily living is an 
essential element of the New Public Health.

DEMOGRAPHIC AND EPIDEMIOLOGICAL 
TRANSITION

Public health uses a population approach to achieve many 
of its objectives. This requires defining the population, 
including trends of change in the age and gender distribu-
tion of the population, fertility and birth rates, spread of dis-
ease and disability, mortality, marriage and migration, and 
socioeconomic factors. The reduction of infectious disease 
as the major cause of mortality, increased longevity coupled 
with declining fertility rates, resulted in changes in the age 
composition, or a demographic transition. Demographic 
changes, such as fertility and mortality patterns, are impor-
tant factors in changing the age distribution of the popu-
lation, resulting in a greater proportion of people surviving
to older ages. Declining infant mortality, increasing educational levels of women, the availability of birth control, and other social and economic factors lead to changes in fertility patterns and the demographic transition – an aging of the population – with important effects on health service needs.

The age and gender distribution of a population affects and is affected by patterns of disease. Change in epidemiological patterns, or an epidemiological shift, is a change in predominant patterns of morbidity and mortality. The transition of infectious diseases becoming less prominent as causes of morbidity and mortality and being replaced by chronic and non-infectious diseases has occurred in both developed and developing countries. The decline in mortality from chronic diseases, such as cardiovascular disease, represents a new stage of epidemiological transition, creating an aging population with higher standards of health but also long-term community support and care needs. Monitoring and responding to these changes are fundamental responsibilities of public health, and a readiness to react to new, local, or generalized changes in epidemiological patterns is vital to the New Public Health.

Societies are not totally homogeneous in ethnic composition, levels of affluence, or other social markers. On one hand, a society classified as developing may have substantial numbers of people with incomes that promote overnutrition and obesity, so that disease patterns may include increasing prevalence of diseases of excesses, such as diabetes. On the other hand, affluent societies include population groups with disease patterns of poverty, including poor nutrition and low birth-weight babies.

A further stage of epidemiological transition has been occurring in the industrialized countries since the 1960s, with dramatic reductions in mortality from CHD, stroke and, to a lesser extent, trauma. The interpretation of this epidemiological transition is still not perfectly clear. How it occurred in the industrialized western countries but not in those of the former Soviet Union is a question whose answer is vital to the future of health in Russia and some countries of Eastern Europe. Developing countries must also prepare to cope with increasing epidemics of non-infectious diseases, and all countries face renewed challenges from infectious diseases with antibiotic resistance or newly appearing infectious agents posing major public health threats.

Demographic change in a country may reflect social and political decisions and health system priorities from decades before. Russia’s rapid population decline since the 1990s, China’s gender imbalance with a shortage of millions of young women, Egypt’s rapid population growth outstripping economic capacity, and many other examples indicate the severity and societal importance of capacity to analyze and formulate public health and social policies to address such fundamental sociopolitical issues.

Aging of the population is now the norm in most developed countries as a result of low birth and declining mortality rates. This change in the age distribution of a population has many associated social and economic issues as to the future of social welfare with a declining age cohort to provide the workforce. The aging population requires pension and health care support which make demands of social security systems that will depend on economic growth with a declining workforce. In times of economic stress, as in Europe, this situation is made more difficult by longstanding short working weeks, early pension ages, and high social benefits. However, this results in unemployment among young people in particular and social conflict. The interaction of increasing life expectancy and a declining workforce is a fundamental problem in the high-income countries. This imbalance may be resolved in part through productivity gains and switching of primary production to countries with large still underutilized workforces, while employment in the developed countries will depend on service industries including health and the economic growth generated by higher technology and intellectual property and service industries.

**INTERDEPENDENCE OF HEALTH SERVICES**

The challenge of keeping populations and individuals healthy is reflected in modern health services. Each component of a health service may have developed with different historical emphases, operating independently as a separate service under different administrative auspices and funding systems, competing for limited health care resources. In this situation, preventive community care receives less attention and resources than more costly treatment services. Figure 2.5 suggests a set of health services in an interactive relationship to serve a community or defined population, but the emphasis should be on the interdependence of these services with one other and with the comprehensive network in order to achieve effective use of resources and a balanced set of services for the patient, the client or patient population, and the community.

Clinical medicine and public health each play major roles in primary, secondary, and tertiary prevention. Each may function separately in their roles in the community, but optimal success lies in their integrated efforts. Allocation of resources should promote management and planning practices to assist this integration. There is a functional interdependence of all elements of health care serving a definable population. The patient should be the central figure in the continuum or complex of services available. Effectiveness in use of resources means that providing the service most appropriate for meeting the individual’s or group’s needs at a point in time are those that should be applied. This is the central concept in currently developing innovations in health care delivery in the USA with organizations using terms such as patient centered medical home, accountable care organizations (ACOs), and population health management systems, which are being promoted in the Obamacare
health reforms now in process (see Chapter 10) (Shortell et al., 2010).

Separate organization and financing of services place barriers to appropriate provision of services for both the community and the individual patient. The interdependence of services is a challenge in health care organizations for the future. Where there is competition for limited resources, pressures for tertiary services often receive priority over programs to prevent children from dying of preventable diseases. Public health must be seen in the context of all health care and must play an influential role in promoting prevention at all levels. Clinical services need public health in order to provide prevention and community health services that reduce the burden of disease, disability, and dependence on the institutional setting.

DEFINING PUBLIC HEALTH

Health was traditionally thought of as a state of absence of disease, pain, or disability, but has gradually been expanded to include physical, mental, and societal well-being. In 1920, C. E. A. Winslow, professor of public health at Yale University, defined public health as follows:

“Public health is the Science and Art of (1) preventing disease, (2) prolonging life, and (3) promoting health and efficiency through organized community effort for:

(a) the sanitation of the environment,
(b) the control of communicable infections,
(c) the education of the individual in personal hygiene,
(d) the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and
(e) the development of social machinery to ensure everyone a standard of living adequate for the maintenance of health, so organizing these benefits as to enable every citizen to enjoy his birthright of health and longevity.”

(Quoted in Institute of Medicine. The future of public health. Washington, DC: National Academy Press; 1988)

Winslow’s far-reaching definition remains a valid framework but is unfulfilled when clinical medicine and public health have financing and management barriers between them. In many countries, isolation from the financing and provision of medical and nursing care services left public health with the task of meeting the health needs of the indigent and underserved population groups with inadequate resources and recognition. Health insurance organizations for medical and hospital care have in recent years been more open to incorporating evidence-based preventive care, but the organization of public health has lacked the same level of attention. In some countries, the limitations have been conceptual in that public health was defined primarily in terms of control of infectious, environmental, and occupational diseases.
A more recent and widely used definition is:

"Public health is the science and art of preventing disease, prolonging life, and promoting health through the organized efforts of society."

This definition, coined in 1988 in the Public Health in England report by Sir Donald Acheson, reflects the broad focus of modern public health.

Terms such as social hygiene, preventive medicine, community medicine, and social medicine have been used to denote public health practice over the past century. Preventive medicine is the application of preventive measures by clinical practitioners combining some elements of public health with clinical practice relating to individual patients. Preventive medicine defines medical or clinical personal preventive care, with stress on risk groups in the community and national efforts for health promotion. The focus is on the health of defined populations to promote health and well-being using evidence-based guidelines for cost-effective preventive measures. Measures emphasized include screening and follow-up of chronic illnesses, and immunization programs; for example, influenza and pneumococcal pneumonia vaccines are used by people who are vulnerable because of their age, chronic diseases, or risk of exposure, such as medical and nursing personnel and those providing other personal clinical services. Clinical medicine also deals in the area of prevention in the management of patients with hypertension or diabetes, and in doing so prevents the serious complications of these diseases.

Social Medicine and Community Health

Social medicine is also primarily a medical specialty which looks at illness in an individual in the family and social context, but lacks the environmental and regulatory and organized health promotion functions of public health. Community health implies a local form of health intervention, whereas public health more clearly implies a global approach. The focus is on the health of defined populations to promote health and well-being using evidence-based guidelines for cost-effective preventive measures. Measures emphasized include screening and follow-up of chronic illnesses, and immunization programs; for example, influenza and pneumococcal pneumonia vaccines are used by people who are vulnerable because of their age, chronic diseases, or risk of exposure, such as medical and nursing personnel and those providing other personal clinical services. Clinical medicine also deals in the area of prevention in the management of patients with hypertension or diabetes, and in doing so prevents the serious complications of these diseases.

Social Hygiene, Eugenics, and Corruption of Public Health Concepts

The ethical base of public health in Europe evolved in the context of its successes in the nineteenth and early twentieth centuries along with ideas of social progress. But the twentieth century was also replete with extremism and wide-scale abuse of human rights, with mass executions, deportations,
and starvation as official policy in fascist and Stalinist regimes. Eugenics, a pseudoscience popularized in the early decades of the twentieth century, promoted social policies meant to improve the hereditary qualities of a race by methods such as sterilization of mentally handicapped people.

The “social and racial hygiene” of the eugenics movements led to the medicalization of sterilization in the USA and other countries. This was adopted and extended in Nazi Germany to a policy of murder, first of the mentally and physically handicapped and then of “racial inferiors”. These eugenics theories were widely accepted in the medical community in Germany, then used by the Nazi regime to justify medically supervised killing of hundreds of thousands of helpless, incapacitated individuals. This practice was linked to wider genocide and the Holocaust, with the brutalization and industrialized murder of over 6 million Jews and 6 million other people, and corrupt medical experimentation on prisoners. Following World War II, the ethics of medical experimentation (and public health) were codified in the Nuremberg Code and Universal Declaration of Human Rights based on lessons learned from these and other atrocities inflicted on civilian populations (see Chapter 15).

Threats of genocide, ethnic cleansing, and terrorism are still present on the world stage, often justified by current warped versions of racial hygienic theories. Genocidal incitement and actual genocide and terrorism have recurred in the last decades of the twentieth century and into the twenty-first century in the former Yugoslav republics, Africa (Rwanda and Darfur), south Asia, and elsewhere. Terrorism against civilians has become a worldwide phenomenon with threats of biological and chemical agents, and potentially with nuclear capacity. Asymmetrical warfare of insurgencies which use innocent civilians for cover, as with other forms of warfare, carries with it grave dangers to public health, human rights, and international stability, as seen in the twenty-first century in South Sudan, Darfur, DR Congo, Chechnya, Iraq, Afghanistan, and Pakistan.

Medical Ecology

In 1961, Kerr White and colleagues defined medical ecology as population-based research providing the foundation for management of health care quality. This concept stresses a population approach, including those not attending and those using health services. This concept was based on previous work on quality of care, randomized clinical trials, medical audit, and structure–process–outcome research. It also addressed health care quality and management.

These themes influenced medical research by stressing the population from which clinical cases emerge as well as public health research with clinical outcome measures, themes that recur in the development of health services research and, later, evidence-based medicine. This led to the development of the Agency for Health Care Policy and Research and Development in the US Department of Health and Human Services and evidence-based practice centers to synthesize fundamental knowledge for the development of information for decision-making tools such as clinical guidelines, algorithms, or pathways. Clinical guidelines and recommended best practices have become part of the New Public Health to promote quality of patient care and public health programming. These can include recommended standards; for example, follow-up care of the postmyocardial infarction patient, an internationally recommended immunization schedule, recommended dietary intake or food fortification standards, and mandatory vitamin K and eye care for all newborns and many others (see Chapter 15).

Community-Oriented Primary Care

Community-oriented primary care [COPC] is an approach to primary health care that links community epidemiology and appropriate primary care, using proactive responses to the priority needs identified. COPC, originally pioneered in South Africa and Israel by Sidney and Emily Kark and colleagues in the 1950s and 1960s, stresses medical services in the community which need to be adapted to the needs of the population as defined by epidemiological analysis. COPC involves community outreach and education, as well as clinical preventive and treatment services.

COPC focuses on community epidemiology and an active problem-solving approach. This differs from national or larger scale planning that sometimes loses sight of the local nature of health problems or risk factors. COPC combines clinical and epidemiological skills, defines needed interventions, and promotes community involvement and access to health care. It is based on linkages between the different elements of a comprehensive basket of services along with attention to the social and physical environment. A multidisciplinary team and outreach services are important for the program, and community development is part of the process.

In the USA, the COPC concept has influenced health care planning for poor areas, especially provision of federally funded community health centers in attempts to provide health care for the underserved since the 1960s. In more recent years, COPC has gained wider acceptance in the USA, where it is associated with family physician training and community health planning based on the risk approach and “managed care” systems. Indeed, the three approaches are mutually complementary (Box 2.9). As the emphasis on health care reform in the late 1990s moved towards managed care, the principles of COPC were and will continue to be important in promoting health and primary prevention in all its modalities, as well as tertiary prevention with follow-up and maintenance of the health of the chronically ill.

COPC stresses that all aspects of health care have moved towards prevention based on measurable health issues in the community. Through either formal or informal linkages
The community, whether local, regional, or national, is the site of action for many public health interventions. Moreover, understanding the characteristics of the community is vital to a successful community-oriented approach. By the 1980s, new patterns of public health began to emerge, including all measures used to improve the health of the community, and at the same time working to protect and promote the health of the individual. The range of activities to achieve these general goals is very wide, including individual patient care systems and the community-wide activities that affect the health and well-being of the individual. These include the financing and management of health systems, evaluation of the health status of the population, and measures to improve the quality of health care. They place reliance on health promotion activities to change environmental risk factors for disease and death. They promote integrative and multisectoral approaches and the international health teamwork required for global progress in health.

**THE WORLD HEALTH ORGANIZATION’S DEFINITION OF HEALTH**

The definition of health in the charter of the WHO as a complete state of physical, mental, and social well-being, had a ring of utopianism and irrelevance to states struggling to provide even minimal care in severely adverse political, economic, social, and environmental conditions (Box 2.10). In 1977, a more modest goal was set for attainment of a level of health compatible with maximum feasible social and economic productivity. One needs to recognize that health and disease are on a dynamic continuum that affects everyone. The mission for public health is to use a wide range of methods to prevent disease and premature death, and improve quality of life for the benefit of individuals and the community.
In the 1960s, most industrialized countries were concentrating energies and financing in health care on providing access to medical and hospital services through national insurance schemes. Developing countries were often spending scarce resources trying to emulate this trend. The WHO was concentrating on categorical programs, such as eradication of smallpox and malaria, as well as the Expanded Program of Immunization and similar specific efforts. At the same time, there was a growing concern that developing countries were placing too much emphasis and expenditure on curative services and not enough on prevention and primary care.

**Alma-Ata: Health for All**

The World Health Assembly (WHA) in 1977 endorsed the primary care approach under the banner of “Health for All by the Year 2000” (HFA 2000). This was a landmark decision and has had important practical results. The WHO and the United Nations Children’s Fund (UNICEF) sponsored a seminal conference held in Alma-Ata, in the USSR (Kazakhstan), in 1978, which was convened to refocus health policy on primary care. The Alma-Ata Declaration stated that health is a basic human right, and that governments are responsible to assure that right for their citizens and to develop appropriate strategies to fulfill this promise. This proposition has come to be increasingly accepted in the international community. The conference stressed the right and duty of people to participate in the planning and implementation of their health care. It advocated the use of scientifically, socially, and economically sound technology. Joint action through intersectoral cooperation was also emphasized.

The Alma-Ata Declaration focused on primary health care as the appropriate method of assuming adequate access to health care for all (Box 2.11). Many countries have gradually come to accept the notion of placing priority on primary care, resisting the temptation to spend high percentages of health care resources on high-tech and costly medicine. Spreading these same resources into highly cost-effective primary care, such as immunization and nutrition programs, provides greater benefit to individuals and to society as a whole.

Alma-Ata provided a new sense of direction for health policy, applicable to developing countries and in a different way than the approaches of the developed countries. During the 1980s, the Health for All concept influenced national health policies in the developing countries with signs of progress in immunization coverage, for example, but the initiative was diluted as an unintended consequence by more categorical programs such as eradication of poliomyelitis. For example, developing countries have accepted immunization and diarrheal disease control as high-priority issues and achieved remarkable success in raising immunization coverage from some 10 percent to over 75 percent in just a decade.

### Box 2.11 Declaration of Alma-Ata, 1978: A Summary of Primary Health Care (PHC)

1. Reaffirms that health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity, and is a fundamental human right.
2. Existing gross inequalities in the health status of the people, particularly between developed and developing countries as well as within countries, are of common concern to all countries.
3. Governments have a responsibility for the health of their people. The people have the right and duty to participate in planning and implementation of their health care.
4. A main social target is the attainment, by all peoples of the world by the year 2000, of a level of health that will permit them to lead a socially and economically productive life.
5. PHC is essential health care based on practical, scientifically sound, and socially acceptable methods and technology.
6. It is the first level of contact of individuals, the family, and the national health system bringing health care as close as possible to where people live and work, as the first element of a continuing health care process.
7. PHC evolves from the conditions and characteristics of the country and its communities, based on the application of social, biomedical, and health services research and public health experience.
8. PHC addresses the main health problems in the community, providing promotive, preventive, curative, and rehabilitative services accordingly.
9. PHC includes the following:
   (a) Education concerning prevailing health problems and methods of preventing and controlling them
   (b) Promotion of food supply and proper nutrition
   (c) Adequate supply of safe water and basic sanitation
   (d) Maternal and child health care, including family planning
   (e) Immunization against the major infectious diseases
   (f) Prevention of locally endemic diseases
   (g) Appropriate treatment of common diseases and injuries
   (h) The provision of essential drugs
   (i) Relies on all health workers … to work as a health team.
10. All governments should formulate national health policies, strategies and plans, mobilize political will and resources, used rationally, to ensure PHC for all people.

Source: World Health Organization. Declaration of Alma-Ata: International Conference on Primary Health Care, Alma-Ata, USSR, 6–12 September 1978. Available at: [http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf](http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf) [Accessed 21 November 2012].

Developed countries addressed these principles in different ways. In these countries, the concept of primary health care led directly to important conceptual developments in health. National health targets and guidelines are now common in many countries and are integral parts of...
national health planning. Reforms of the NHS – for example, as discussed in Chapter 13, remuneration increases for family physicians and encouraging group practice with public health nursing support – have become widespread in the UK. Leading health maintenance organizations, such as Kaiser Permanente in the USA and district health systems in Canada, have emphasized integrated approaches to health care for registered or geographically defined populations (see Chapters 11–13). This approach is becoming common in the USA in ACOs, which will be fostered by the 2010 Obamacare legislation (PPACA). This systematic approach to individual and community health is an integral part of the New Public Health.

The interactions among community public health, personal health services, and health-related behavior, including their management, are the essence of the New Public Health. How the health system is organized and managed affects the health of the individual and the population, as does the quality of providers. Health information systems with epidemiological, economic, and sociodemographic analysis are vital to monitor health status and allow for changing priorities and management. Well-qualified personnel are essential to provide services, manage the system, and carry out relevant research and health policy analysis. Diffusion of data, health information, and responsibility helps to provide a responsive and comprehensive approach to meet the health needs of the individual and community. The physical, social, economic, and political environments are all important determinants of the health status of the population and the individual. Joint action (intersectoral cooperation) between public and non-governmental or community-based organizations is needed to achieve the well-being of the individual in a healthy society.

In the 1980s and 1990s, these ideas contributed to an evolving New Public Health, spurred on by epidemiological changes, health economics, the development of managed care linking health systems, and prepayment. Knowledge and self-care skills, as well as community action to reduce health risks, are no less important in this than the roles of medical practitioners and institutional care. All are parts of a coherent holistic approach to health.

SELECTIVE PRIMARY CARE

The concept of selective primary care, articulated in 1979 by Walsh and Warren, addresses the needs of developing countries to select those interventions on a broad scale that would have the greatest positive impact on health, taking into account limited resources such as money, facilities, and human resources.

The term selective primary care is meant to define national priorities that are based not on the greatest causes of morbidity or mortality, but on common conditions of epidemiological importance for which there are effective and simple preventive measures. Throughout health planning, there is an implicit or explicit selection of priorities for allocation of resources. Even in primary care, selection of targets is a part of the process of resource allocation. In modern public health, this process is more explicit. A country with limited resources and a high birth rate will emphasize maternal and child health before investing in geriatric care.

This concept has become part of the microeconomics of health care and technology assessment, discussed in Chapters 11 and 15, respectively, and is used widely in setting priorities and resource allocation. In developing countries, cost-effective primary care interventions have been articulated by many international organizations, including iodization of salt, use of oral rehydration therapy (ORT) for diarrheal diseases, vitamin A supplementation for all children, expanded programs of immunization, and others that have the potential for saving hundreds of thousands of lives yearly at low cost. In developed countries, health promotions targeted to reduce accidents and risk factors such as smoking, high-fat diets, and lack of exercise for cardiovascular diseases are low-cost public health interventions that save lives and reduce the use of hospital care.

Targeting specific diseases is essential for efforts to control TB or eradicate polio, but at the same time, development of a comprehensive primary care infrastructure is equally or even more important than the single-disease approach. Some disease entities such as HIV/AIDS attract donor funding more readily than basic infrastructure services such as immunization, and this can sometimes be detrimental to addressing the overall health needs of the population and other neglected but also important diseases.

THE RISK APPROACH

The risk approach selects population groups on the basis of risk and helps to determine interventional priorities to reduce morbidity and mortality. The measure of health risk is taken as a proxy for need, so that the risk approach provides something for all, but more for those in need, in proportion to that need. In epidemiological terms, these are people with higher relative risk or attributed risk.

Some groups in the general population are at higher risk than others for specific conditions. The Expanded Programme on Immunization (EPI), Control of Diarrhoeal Diseases (CDD), and Acute Respiratory Disease (ARD) programs of the WHO are risk approaches to tackling fundamental public health problems of children in developing countries.

Public health places considerable emphasis on maternal and child health because these are vulnerable periods in life for specific health problems. Pregnancy care is based on a basic level of care for all, with continuous assessment
of risk factors that require a higher intensity of follow-up. Prenatal care helps to identify factors that increase the risk for the pregnant woman or her fetus/newborn. Efforts directed towards these special risk groups have the potential to reduce morbidity and mortality. High-risk case identification, assessment, and management are vital to a successful maternal care program.

Similarly, routine infant care is designed not only to promote the health of infants, but also to find the earliest possible indications of deviation and the need for further assessment and intervention to prevent a worsening of the condition. Low birth-weight babies are at greater risk for many short- and long-term hazards and should be given special treatment. All babies are routinely screened for birth defects or congenital conditions such as hypothyroidism, phenylketonuria, and other metabolic and hematological diseases. Screening must be followed by investigating and treating those found to have a clinical deficiency. This is an important element of infant care because infancy itself is a risk factor.

As will be discussed in Chapters 6 and 7 and others, epidemiology has come to focus on the risk approach with screening based on known genetic, social, nutritional, environmental, occupational, behavioral, or other factors contributing to the risk for disease. The risk approach has the advantage of specificity and is often used to initiate new programs directed at special categories of need. This approach can lead to narrow and somewhat rigid programs that may be difficult to integrate into a more general or comprehensive approach, but until universal programs can be achieved, selective targeted approaches are justifiable. Indeed, even with universal health coverage, it is still important to address the health needs or issues of groups at special risk.

Working to achieve defined targets means making difficult choices. The supply and utilization of some services will limit availability for other services. There is an interaction, sometimes positive, sometimes negative, between competing needs and the health status of a population.

THE CASE FOR ACTION

Public health identifies needs by measuring and comparing the incidence or prevalence of the condition in a defined population with that in other comparable population groups and defines targets to reduce or eliminate the risk of disease. It determines ways of intervening in the natural epidemiology of the disease, and develops a program to reduce or even eliminate the disease. It also assesses the outcomes in terms of reduced morbidity and mortality, as well as the economic justification in cost-effectiveness analysis to establish its value in health priorities.

Because of the interdependence of health services, as well as the total financial burden of health care, it is essential to look at the costs of providing health care, and how resources should be allocated to achieve the best results possible. Health economics has become a fundamental methodology in policy determination. The costs of health care, the supply of services, the needs for health care or other health-promoting interventions, and effective means of using resources to meet goals are fundamental in the New Public Health. It is possible to err widely in health planning if one set of factors is overemphasized or underemphasized. Excessive supply of one service diminishes the availability of resources for other needed investments in health. If diseases are not prevented or their sequelae not well managed, patients must use costly health care services and are unable to perform their normal social functions such as learning at school or performing at work. Lack of investment in health promotion and primary prevention creates a larger reliance on institutional care, driving health costs upwards, and restricting flexibility in meeting patients’ needs. The interaction of supply and demand for health services is an important determinant of the political economy of health care. Health and its place in national priorities are determined by the social-political philosophy and resource allocation of a government.

The case for action, or the justification for a public health intervention, is a complex of epidemiological, economic, and public policy factors (Table 2.1). Each disease or group of diseases requires its own case for action. The justification for public health intervention requires sufficient evidence of the incidence and prevalence of the disease (see Chapter 3).

Evidence-based public health takes into account the effectiveness and safety of an intervention; risk factors; safe means at hand to intervene; the human, social, and economic cost of the disease; political factors; and a policy decision as to the priority of the problem. This often depends on subjective factors, such as the guiding philosophy of the health system and the way it allocates resources.

Some interventions are so well established that no new justification is required to make the case, and the only question is how to do it most effectively. For example, infant vaccination is a cost-effective and cost-beneficial program for the protection of the individual child and the population as a whole. Whether provided as a public service or as a clinical preventive measure by a private medical practitioner, it is in the interest of public health that all children be immunized.

An outbreak of diarrheal disease in a kindergarten presents an obvious case for action, and a public health system must respond on an emergency basis, with selection of the most suitable mode of intervention. The considerations in developing a case for action are outlined above. Need is based on clinical and epidemiological evidence, but also on the importance of an intervention in the eyes of the public. The technology available, its effectiveness and safety, and accumulated experience are important in the equation, as are the acceptability and affordability of appropriate interventions. The precedents for use of an intervention are also important.
On epidemiological evidence, if the preventive practice has been seen to provide reduction in risk for the individual and for the population, then there is good reason to implement it. The costs, risks and benefits must be examined as part of the justification to help in the selection of health priorities.

Health systems research examines the efficiency of health care and promotes improved efficiency and effective use of resources. This is a vital function in determining how best to use resources and meet current health needs. Past emphasis on hospital care at the expense of less development of primary care and prevention is still a common issue, particularly in former Soviet and developing countries, where a high percentage of total health expenditure goes to acute hospital care with long length of stay, with smaller allocation to preventive and community health care. The result of this imbalance is high mortality from preventable diseases.

New drugs, vaccines, and medical equipment are continually becoming available, and each new addition needs to be examined among the national health priorities. Sometimes, owing to cost, a country cannot afford to add a new vaccine to the routine. However, when there is good evidence for efficacy and safety of new vaccines, drugs, diagnostic methods or other innovations, it could be applied for those at greatest risk. Although there are ethical issues involved, it may be necessary to advise parents or family members to purchase the vaccine independently. Clearly, recommending individual purchase of a vaccine is counter to the principle of equity and solidarity, benefiting middle-class families, and providing a poor basis of data for evaluation of the vaccine and its target disease. On the other hand, failure to advise parents of potential benefits to their children creates other ethical problems, but may increase public pressure and insurance system acceptance of new methods, e.g., varicella and HPV vaccines.

Mass screening programs involving complete physical examinations have not been found to be cost-effective or to significantly reduce disease. In the 1950s and 1960s, routine general health examinations were promoted as an effective method of finding disease early. Since the late 1970s, a selective and specific approach to screening has become widely accepted. This involves defining risk categories for specific diseases and bearing in mind the potential for remedial action. Early case finding of colon cancer by routine fecal blood testing and colonoscopy has been found to be effective, and Pap smear testing to discover cancer of the cervix is timed according to risk category. Screening for colorectal cancer is essential for modern health programs and has been adopted by most industrialized countries. Outreach programs by visits, telephones, emails or other modern methods of communication are important to contact non-attenders to promote utilization, and have been shown to increase compliance with proven effective measures. Screening technology is changing and often the subject of intense debate as such programs are costly and their cost-effectiveness is an important matter for policy making: screening for lung cancer is becoming a feasible and effective matter for high-risk groups, whereas breast cancer screening frequency is now in dispute; while nanotechnology and bioengineering promises new methods for cancer screening.

The factor of contribution to quality of life should be considered. A vaccine for varicella is justified partly for the prevention of deaths or illness from chickenpox. A stronger

| Ethics and Potential | Issues |
|----------------------|--------|
| The right to health   | Public expectation and social norms |
| Public advocacy       | Concerned groups, the media, an individual |
| Need – epidemiological and clinical | Morbidity, mortality, functional disability, physiological indicators |
| Available technology  | Documented effectiveness, safety, experience, acceptability, affordability |
| Precedent – “state of the art” | Good public health practice; standards from leading centers of excellence, not necessarily consensus |
| Research and cumulative evidence | New evidence from research and practice should be published in peer-reviewed journals and made accessible to all policy makers and practitioners |
| Teaching public health | All health professionals should have broad introductory courses in public health |
| Legal constraints and liability | Law and court decisions, providers, managed care, and governments |
| Costs and benefits    | Direct cost to health system; indirect cost to the individual, family, and society |
| Acceptability         | Media and public opinion |
| Leadership            | Political, professional, the media, advocacy groups, public opinion |
| Quality of life        | Optimizing human potential in healthy communities |
The association between health and political issues was emphasized by European innovators such as Rudolf Virchow (and in Great Britain by Edwin Chadwick; see Chapter 1) in the mid-nineteenth century, when the conditions of the working population were such that epidemic diseases were rife and mortality was high, especially in the crowded slums of the industrial revolution. The same observations led Bismarck in Germany to introduce early forms of social insurance for the health of workers and their families in the 1880s, and to Britain’s 1911 national health insurance, also for workers and families. The role of government in providing universal access to health care was a struggle in individual countries during the twentieth century and lasting into the second decade of the twenty-first century (e.g. President Obama’s Affordable Health Care Act of 2010).

As the concept of public health has evolved, and the cost effectiveness of medical care has improved through scientific and technological advances, societies have identified health as a legitimate area of activity for collective bargaining and government. With this process, the need to manage health care resources has become more clearly defined as a public responsibility. In industrialized countries, each with very different political make-up, national responsibility for universal access to health has become part of the social ethos. With that, the financing and managing of health services have developed into part of a broad concept of public health, and economics, planning, and management have come to be part of the New Public Health (discussed in Chapters 10–13).

Social, ethical, and political philosophies have profound effects on policy decisions including allocation of public monies and resources. Investment in public health is now recognized as an integral part of socioeconomic development. Governments are major suppliers of funds and leadership in health infrastructure development, provision of health services, and health payment systems. They also play a central role in the development of health promotion and regulation of the environment, food, and drugs essential for community health.

In liberal social democracies, the individual is deemed to have a right to health care. The state accepts responsibility to ensure availability, accessibility, and quality of care. In many developed countries, government has also taken responsibility to arrange funding and services that are equitably accessible and of high quality. Health care financing may involve taxation, allocation, or special mandatory requirements on employers to pay for health insurance. Services may be provided by a state-financed and -regulated service or through NGOs and/or private service mechanisms. These systems allocate between 6 percent and 14 percent of gross national product (GNP) to health services, with some governments funding over 80 percent of health expenditure; for example, Canada and the UK.

In communist states, the state organizes all aspects of health care with the philosophy that every citizen is entitled to equity in access to health services. The state health system manages research, staff training, and service delivery, even if operational aspects are decentralized to local health authorities. This model applied primarily to the Soviet model of health services. These systems, except for Cuba, placed financing of health low on the national priority, with funding less than 4 percent of GNP. In the shift to market economies in the 1990s, some former Socialist countries,
such as Russia, are struggling with poor health status and a
difficult shift from a strongly centralized health system to a
decentralized system with diffusion of powers and responsi-
bilities. Promotion of market concepts in former Soviet
countries has reduced access to care and created a serious
dilemma for their governments.

Former colonial countries, independent since the 1950s
and 1960s, largely carried on the governmental health
structures established in the colonial times. Most develop-
ing countries have given health a relatively low place in
budgetary allotment, with expenditures under 3 percent of
GNP. Since the 1980s, there has been a trend in develop-
ing countries towards decentralization of health services
and greater roles for NGOs, and the development of health
insurance. Some countries, influenced by medical concepts
of their former colonial master countries, fostered the de-
velopment of specialty medicine in the major centers with little
emphasis on the rural majority population. Soviet influence
in many ex-colonial countries promoted state-operated sys-
tems. The WHO promoted primary care, but the allocations
favored city-based specialty care. Israel, as an ex-colony,
adapted British ideas of public health together with Central
European sick funds and maternal and child health as major
streams of development until the mid-1990s.

A growing new conservatism in the 1980s and 1990s in
the industrialized countries is a restatement of old values in
which market economics and individualistic social values
are placed above concepts of the “common good” of liberal-
ism and socialism in its various forms. In the more extreme
forms of this concept, the individual is responsible for his
or her own health, including payment, and has a choice of
health care providers that will respond with high-quality
personalized care.

Market forces, meaning competition in financing and
provision of health services with rationing of services,
based on fees or private insurance and willingness and abil-
ity to pay, have become part of the ideology of the new
conservatism. It is assumed that the patient (i.e., the con-
sumer) will select the best service for his or her need, while
the provider best able to meet consumer expectations will
thrive. In its purest form, the state has no role in providing
or financing of health services except those directly related
to community protection and promotion of a healthful envi-
ronment without interfering with individual choices. The
state ensures that there are sufficient health care provid-
ers and allows market forces to determine the prices and
distribution of services with minimal regulation. The USA
retains this orientation in a highly modified form, with 86
percent of the population covered by some form of private
or public insurance systems (see Chapters 10 and 13).

Modified market forces in health care are part of health
reforms in many countries as they seek not only to ensure
quality health care for all but also to constrain costs. A free
market in health care is costly and ultimately inefficient
because it encourages inflation of provider incomes or bud-
gets and increasing utilization of highly technical services.
Further, even in the most free market societies, the economy
of health care is highly influenced by many factors outside
the control of the consumer and provider. The total national
health expenditure in the USA rose rapidly until reaching
over 17.7 percent of gross domestic product (GDP) in 2011,
the highest of any country, despite serious deficiencies for
those without any or with very inadequate health insurance
(in total more than 30 percent of the population). This figure
compares to some 11.2 percent of GDP in Canada, which
has universal health insurance under public administration.
Following the 1994 defeat of President Clinton’s national
health program, the conservative Congress and the business
community took steps to expand managed care in order to
control costs, resulting in a revolution in health care in the
USA (see Chapters 11 and 13). In the 2011–2019 decade
health expenditure in the USA is expected to rise to 19.6
percent of GDP, partly owing to increased population cover-
age with implementation of the PPACA (Obamacare).

Reforms are being implemented in many “socialized”
health systems. These may be through incentives to pro-
ome achievement of performance indicators, such as full
immunization coverage. Others are using control of supply,
such as hospital beds or licensed physicians, as methods of
reducing overutilization of services that generates increas-
ing costs. Market mechanisms in health are aimed not only
at the individual but also at the provider. Incentive payment
systems must work to protect the patient’s legitimate needs,
and conversely incentives that might reduce quality of care
should be avoided. Fee-for-service promotes high rates of
services such as surgery. Increasing private practice and user
fees can adversely affect middle- and low-income groups, as
well as employers, by raising the costs of health insurance.
Managed care systems, with restraints on fee-for-service
medical practice, have emerged as a positive response to
the market approach. Incentive systems in payments for ser-

vices may be altered by government or insurance agencies in
order to promote rational use of services, such as reduction
of hospital stays. The free market approach is affecting plan-
ing of health insurance systems in previously highly cen-
tralized health systems in developing countries as well as the
redevelopment of health systems in former Soviet countries.

Despite political differences, reform of health systems
has become a common factor in virtually all health systems
since the 1990s, as each government searches for cost-
effectiveness, quality of care, and universality of coverage.
The new paradigm of health care reform sees the conver-
gence of different systems to common principles. National
responsibility for health goals and health promotion leads
to national financing of health care with regional and man-
aged care systems. Most developed countries have long
since adopted national health insurance or service systems.
Some governments may, as in the USA, insure only the
highest risk groups such as the elderly and the poor, leaving the working and middle classes to seek private insurers. The nature and direction of health care reform affecting coverage of the population are of central importance in the New Public Health because of its effects on allocation of resources and on the health of the population.

The effects of the economic crisis in the USA are being felt worldwide. While the downturn has largely occurred in wealthier nations, the poor in low-income countries will be among those affected. Past economic downturns have been followed by substantial drops in foreign aid to developing countries.

SOCIAL, BEHAVIORAL, AND POLITICAL SCIENCES

As public health gained from sanitary and other control measures for infectious diseases, along with mother and child care, nutrition, and environmental and occupational health, it also gained strength and applicability from advances in the social and behavioral sciences. Social Darwinism, a political philosophy that assumed “survival of the fittest” and no intervention of the state to alleviate this assumption, was popular in the early nineteenth century but became unacceptable in industrialized countries, which adopted social policies to alleviate the worst conditions of poverty, unemployment, poor education, and other societal ills.

The political approach to focusing on health and poverty is associated with Jeremy Bentham in Britain in the late eighteenth century, who promoted social and political reform and “the greatest good for the greatest number”, or utilitarianism. Rudolf Virchow, an eminent pathologist and a leader in recognizing ill-health and poverty as cause and effect, called for political action to create better conditions for the poor and working-class population.

The struggle for a social contract was promoted by pioneer reformists such as Edwin Chadwick (General Report on the Sanitary Condition of the Labouring Population of Great Britain, 1842), who later became the first head of the Board of Health in Britain, and Lemuel Shattuck (Report of a General Plan for the Promotion of Public and Personal Health, 1850). Shattuck was the organizer and first president of the American Statistical Association.

The social sciences have become fundamental to public health, with a range of disciplines including vital statistics and demography (seventeenth century), economics and politics (nineteenth century), sociology (twentieth century), history, anthropology, and others, which provide collectively important elements of epidemiology of crucial significance for survey methods and qualitative research (see Chapter 3). These advances contributed greatly to the development of methods of studying diseases and risk factors in a population and are still highly relevant to addressing inequalities in health.

HEALTH AND DEVELOPMENT

Individuals in good health are better able to study and learn, and be more productive in their work. Improvements in the standard of living have long been known to contribute to improved public health; however, the converse has not always been recognized. Investment in health care was not considered a high priority in many countries where economic considerations directed investment to the “productive” sectors such as manufacturing and large-scale infrastructure projects, such as hydroelectric dams.

Whether health is a contributor to economic development or a drain on societies’ resources has been a fundamental debate between socially and market-oriented advocates. Classic economic theory, both free enterprise and communist, has tended to regard health as a drain on economies, distracting investment needed for economic growth. As a result, in many countries health has been given low priority in budgetary allocation, even when the major source of financing is governmental. This belief among economists and banking institutions prevented loans for health development on the grounds that such funds should focus on creating jobs and better incomes, before investing in health infrastructure. Consequently, the development of health care has been hampered.

A socially oriented approach sees investment in health as necessary for the protection and development of “human capital”, just as investment in education is needed for the long-term benefit of the economy of a country. In 1993, the World Bank’s World Development Report: Investing in Health articulated a new approach to economics in which health, along with education and social development, is seen as an essential precondition for and contributor to economic development. While many in the health field have long recognized the importance of health for social and economic improvement, its adoption by leading international development banking may mark a turning point for investment in developing nations, so that health may be a contender for increased development loans.

The concept of an essential package of services discussed in that report establishes priorities in low- and middle-income countries for efficient use of resources based on the burden of disease and cost-effectiveness analysis of services. It includes both preventive and curative services targeted to specific health problems. It also recommends support for comprehensive primary care, such as for children, and infrastructure development including maternity and hospital care, medical and nursing outreach services, and community action to improve sanitation and safe water supplies.

Reorientation of government spending on health is increasingly being adopted, as in the UK, to improve equity in access for the poor and other neglected sectors or regions of society with added funding for relatively deprived areas.
to improve primary care services. Differential capitation funding as a form of affirmative action to provide for high-needs populations is a useful concept in public health terms to address the inequities still prevalent in many countries.

HEALTH SYSTEMS: THE CASE FOR REFORM

As medical care has gradually become more involved in prevention, and as it has moved into the era of managed care, the gap between public health and clinical medicine has narrowed. As noted above, many countries are engaged in reforms in their health care systems. The motivation is largely derived from the need for cost containment, but also to extend health care coverage to underserved parts of the population. Countries without universal health care still have serious inequities in distribution of or access to services, and may seek reform to reduce those inequities, perhaps under political pressures to improve the provision of services. Incentives for reform are needed to address regional inequities, and preserving or developing universal access and quality of care, but also on inequities in health between the rich and the poor countries and within even the wealthy countries.

In some settings, a health system may fail to keep pace with developments in prevention and in clinical medicine. Some countries have overdeveloped medical and hospital care, neglecting important initiatives to reduce the risk of disease. The process of reform requires setting standards to measure health status and the balance of services to optimize health. A health service can set a target of immunizing 95 percent of infants with a national immunization schedule, but requires a system to monitor performance and incentives for changes.

A health system may also have failed to adapt to changing needs of the population through lack, or misuse, of health information and monitoring systems. As a result, the system may err seriously in its allocation of resources, with excessive emphasis on hospital care and insufficient attention to primary and preventive care. All health services should have mechanisms for correctly gathering and analyzing needed data for monitoring the incidence of disease and other health indicators, such as hospital utilization, ambulatory care, and preventive care patterns. For example, the UK’s NHS periodically undertakes a restructuring process of parts of the system to improve the efficiency of service. This involves organizational changes and decentralization with regional allocation of resources (see Chapter 13).

Health systems are under pressures of changing demographic and epidemiological patterns as well as public expectations, rising costs of new technology, financing, and organizational change. New problems must be continually addressed with selection of priority issues and the most effective methods chosen. Reforms may create unanticipated problems, such as professional or public dissatisfaction, which must be evaluated, monitored, and addressed as part of the evolution of public health.

ADVOCACY AND CONSUMERISM

Literacy, freedom of the press, and increasing public concern for social and health issues have contributed to the development of public health. The British medical community lobbied for restrictions on the sale of gin in the 1780s in order to reduce the damage that it caused to the working class. In the late eighteenth and the nineteenth centuries, reforms in society and sanitation were largely the result of strongly organized advocacy groups influencing public opinion through the press. Such pressure stimulated governments to act in regulating the working conditions of mines and factories. Abolition of the slave trade and its suppression by the British navy in the early nineteenth century resulted from successful advocacy groups and their effects on public opinion through the press. Vaccination against smallpox was promoted by privately organized citizen groups, until later taken up by local and national government authorities.

Advocacy consists of activities of individuals or groups publicly pleading for, supporting, espousing, or recommending a cause or course of action. The advocacy role of reform movements in the nineteenth century was the basis of the development of modern organized public health. Campaigns ranged from the reform of mental hospitals, nutrition for sailors to prevent scurvy and beriberi, and labor laws to improve working conditions for women and children in particular, to the promotion of universal education and improved living conditions for the working population. Reforms on these and other issues resulted from the stirring of the public consciousness by advocacy groups and the public media, all of which generated political decisions in parliaments (Box 2.12). Such reforms were in large part motivated by fear of revolution throughout Europe in the mid-nineteenth century and the early part of the twentieth century.

Trade unions, and before them medieval guilds, fought to improve hours, safety, and conditions of work, as well as social and health benefits for their members. In the USA, collective bargaining through trade unions achieved wage increases and widespread coverage of the working population under voluntary health insurance. Unions and some industries pioneered prepaid group practice, the predecessor of health maintenance organizations and managed care or the more recent ACOs (see Chapters 10 and 13).

Through raising public consciousness on many issues, advocacy groups pressure governments to enact legislation to restrict smoking in public places, prohibit tobacco advertising, and mandate the use of bicycle helmets. Advocacy groups play an important role in advancing health based on disease groups, such as cancer, multiple sclerosis, and thalassemia, or advancing health issues, such as the organizations promoting breastfeeding, environmental improvement, or smoking
The history of public health is replete with pioneers whose professional advocacy and resistance have focused on specific issues and have made major contributions to the development of public health. Professional organizations, including trade unions, professional groups, women’s groups, and self-help groups, have played an important role in innovation and meeting community health needs. Advocacy groups, including trade unions, professional organizations, which can number in the hundreds in a country, advocate the importance of their special concern and organizations, which can number in the hundreds in a country, advocate the importance of their special concern and the need for services or facilities that are not usually provided within insured health programs. Such organizations, which can number in the hundreds in a country, advocate the importance of their special concern and play an important role in innovation and meeting community health needs. Advocacy groups, including trade unions, professional groups, women’s groups, self-help groups, and many others, focus on specific issues and have made major contributions to advancing the New Public Health.

**Professional Advocacy and Resistance**

The history of public health is replete with pioneers whose discoveries led to strong opposition and sometimes violent rejection by conservative elements and vested interests in medical, public, or political circles. Opposition to Jenner’s vaccination, the rejection of Semmelweis by colleagues in Vienna, and the contemporary opposition to the work of great pioneers in public health such as Pasteur, Florence Nightingale, and many others may deter or delay implementation of other innovations and new breakthroughs in preventing disease. Although opposition to Jenner’s vaccination lasted well into the late nineteenth century in some areas, its supporters gradually gained ascendency, ultimately leading to the global eradication of smallpox. These and other pioneers led the way to improved health, often after bitter controversy on topics later accepted and which, in retrospect, seem to be obvious.

Advocacy has sometimes had the support of the medical profession but elicited a slow response from public authorities. David Marine of the Cleveland Clinic and David Cowie, professor of pediatrics at the University of Michigan, proposed the prevention of goiter by iodization of salt. Marine carried out a series of studies in fish, and then in a controlled clinical trial among schoolgirls in 1917–1919, with startlingly positive results in reducing the prevalence of goiter. Cowie campaigned for the iodization of salt, with support from the medical profession. In 1924, he convinced a private manufacturer to produce Morton’s iodized salt, which rapidly became popular throughout North America. Similarly, iodized salt came to be used in many parts of Europe, mostly without governmental support or legislation. Iodine-deficiency disorders (IDDs) remain a widespread condition, estimated to have affected 2 billion people worldwide in 2013. The target of international eradication of IDD by 2000 was set at the World Summit for Children in 1990, and the WHO called for universal iodization of salt in 1994. By 2008, nearly 70 percent of households in developing countries consumed adequately iodized salt. China and Nigeria, have had great success in recent years with mandatory salt fortification in increasing iodization rates, in China from 39 percent to 95 percent in 10 years. But the problem is not yet gone and even in Europe there is inadequate standardization of iodine levels and population follow-up despite decades of work on the problem.

Professional organizations have contributed to promoting causes such as children’s and women’s health, and environmental and occupational health. The American Academy of Pediatrics has contributed to establishing and promoting high standards of care for infants and children in the USA, and to child health internationally. Hospital accreditation has been used for decades in the USA, Canada, and more recently in Australia and the UK. It has helped to raise standards of health facilities and care by carrying out systematic peer review of hospitals, nursing homes, primary care facilities, and mental hospitals, as well as ambulatory care centers and public health agencies (see Chapter 15).

Public health needs to be aware of negative advocacy, sometimes based on professional conservatism or economic self-interest. Professional organizations can also serve as advocates of the status quo in the face of change. Opposition by the American Medical Association (AMA) and the health insurance industry to national health insurance in the USA has been strong and successful for many decades. The passage of the PPACA has been achieved despite widespread political and public opposition, yet was sustained in the US Supreme Court and is gaining widening popular support as the added value to millions of formerly uninsured Americans becomes clear. In some cases, the vested interest of one profession may block the legitimate development of others, such as when ophthalmologists lobbied successfully against the development of optometry, now widely accepted as a legitimate profession.

**BOX 2.12 The Plimsoll Line**

Political activism for reform in nineteenth-century Britain led to banning and suppressing the slave trade, improvements in working conditions for miners and factory workers, and other major political reforms.

In keeping with this tradition, Samuel Plimsoll (1824–1898), British Member of Parliament elected for Derby in 1868, conducted a solo campaign for the safety of seamen. His book, *Our Seamen*, described ships sent to sea so heavily laden with coal and iron that their decks were awash. Seriously overloaded ships, deliberately sent to sea by unscrupulous owners, frequently capsized, drowning many crew members, with the owners collecting inflated insurance fees.

Overloading was the major cause of wrecks and thousands of deaths in the British shipping industry. Plimsoll pleaded for mandatory Load-Line Certificate markers to be issued to each ship to prevent any ships putting to sea when the marker was not clearly visible. Powerful shipping interests fought him every inch of the way, but he succeeded in having a Royal Commission established, leading to an Act of Parliament mandating the “Plimsoll Line”, the safe carrying capacity of cargo ships. This regulation was adopted by the US Bureau of Shipping as the Load Line Act in 1929 and is now standard practice worldwide.

Political activism for reform in nineteenth-century Britain led to banning and suppressing the slave trade, improvements in working conditions for miners and factory workers, and other major political reforms. 
Jenner’s discovery of vaccination with cowpox to prevent smallpox was adopted rapidly and widely. However, intense opposition by organized groups of antivaccinationists, often led by those opposed to government intervention in health issues and supported by doctors with lucrative variolation practices, delayed the implementation of smallpox vaccination for many decades. Ultimately, smallpox was eradicated in 1972, owing to a global campaign initiated by the WHO. Opposition to legislated restrictions on private ownership of assault weapons and handguns is intense in the USA, led by well-organized, well-funded, and politically powerful lobby groups, despite the amount of morbidity and mortality due to gun-associated violent acts (see Chapter 5).

Flouridation of drinking water is the most effective public health measure for preventing dental caries, but it is still widely opposed, and in some places the legislation has been rescinded even after implementation, by well-organized antifluoridation campaigns. Opposition to flouridation of community water supplies is widespread, and effective lobbying internationally has slowed but has not stopped progress (see Chapter 6). Despite the life-saving value of immunization, opposition still exists in 2013 and harms public health protection. Opposition has slowed progress in poliomyelitis eradication; for example, radical Islamists killed polio workers in northern Nigeria in 2012, one of the last three countries with endemic poliomyelitis. Resistance to immunization in the 1980s has resulted in the recurrence of pertussis and diphtheria and a very large epidemic of measles across Western Europe, including the UK, with further spread to the western hemisphere in 2010–2013 (see Chapter 4).

Progress may be blocked where all decisions are made in closed discussions, not subject to open scrutiny and debate. Public health personnel working in the civil service of organized systems of government may not be at liberty to promote public health causes. However, professional organizations may then serve as forums for the essential professional and public debate needed for progress in the field. Professional organizations such as the APHA provide effective lobbying for the interests of public health programs and can have an important impact on public policy. In mid-1996, efforts by the Secretary of Health and Human Services in the USA brought together leaders of public health with representatives of the AMA and academic medical centers to try to find areas of common interest and willingness to promote the health of the population. In Europe too, increasing cooperation between public health organizations is stimulating debate on issues of transnational importance across the region, which, for example, has a wide diversity of standards on immunization practices and food policies.

Public advocacy has played an especially important role in focusing attention on ecological issues (Box 2.13). In 1995, Greenpeace, an international environmental activist group, fought to prevent the dumping of an oil rig in the North Sea and forced a major oil company to find another solution that would be less damaging to the environment. An explosion on an oil rig in the Gulf of Mexico in 2010 led to enormous ecological and economic damage as well as loss of life. Damages levied on the responsible company (British Petroleum) amount to some $4.5 billion dollars and several criminal negligence charges are pending. Greenpeace also continued its efforts to stop the renewal of testing of atomic bombs by France in the South Pacific.

International protests led to the cessation of almost all testing of nuclear weapons. International concern over global warming has led to growing efforts to stem the tide of air pollution from fossil fuels, coal-burning electrical production, and other manifestations of carbon dioxide and toxic contamination of the environment. Progress is far from certain as newly enriched countries such as China and India follow the rising consumption patterns of western countries. Public advocacy and rejection of wanton destruction of the global ecology may be the only way to prod consumers, governments, and corporate entities such as the energy and transportation industries to change direction. The pace of change from fossil fuels is slow but has captured public attention, and private companies are seeking more fuel efficiency in vehicles and electrical power production, mainly though the use of natural gas instead of fuel oil and coal for electricity production or better still by wind and solar energy. The search for “green solutions” to the global warming crisis has become increasingly dynamic, with governments, the private sector, and the general public keenly aware of the importance of the effort and the dangers of failure.

In the latter part of the twentieth century and the early twenty-first century, prominent international personalities and entertainers have taken up causes such as the removal of land mines in war-torn countries, illiteracy in disadvantaged

**BOX 2.13 An “Enemy of the People”**

Advocacy is a function in public health that has been important in promoting advances in the field, and one that sometimes places the advocate in conflict with established patterns and organizations. One of the classic descriptions of this function is in Henrik Ibsen’s play An Enemy of the People, in which the hero, a young doctor, Thomas Stockmann, discovers that the water in his community is contaminated. This knowledge is suppressed by the town’s leadership, led by his brother the mayor, because it would adversely affect plans to develop a tourist industry of baths in their small Norwegian town in the late nineteenth century.

The young doctor is taunted and abused by the townspeople and driven from the town, having been declared an “enemy of the people” and a potential risk. The allegory is a tribute to the man of principle who stands against the hysteria of the crowd. The term also took on a far more sinister and dangerous meaning in George Orwell’s novel 1984 and in totalitarian regimes of the 1930s to the present time.

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In the latter part of the twentieth century and the early twenty-first century, prominent international personalities and entertainers have taken up causes such as the removal of land mines in war-torn countries, illiteracy in disadvantaged
populations, and funding for antiretroviral drugs for African countries to reduce maternal–fetal transmission of HIV and to provide care for the large numbers of cases of AIDS devastating many countries of sub-Saharan Africa. Rotary International has played a key role in polio eradication efforts globally. The public–private consortium Global Alliance for Vaccines and Immunization (GAVI) has been instrumental in promoting immunization in recent years, with participation by the WHO, UNICEF, the World Bank, the Gates Foundation, vaccine manufacturers, and others. This has had an important impact on extending immunization to protect and save the lives of millions of children in deprived countries not yet able to provide fundamental prevention programs such as immunization at adequate levels. GAVI has brought vaccines to low-income countries around the world, such as rotavirus vaccine, pentavalent vaccine in Myanmar, and pneumococcal vaccine for children in 15 countries in sub-Saharan Africa, including DR Congo. The Bill & Melinda Gates Foundation pledged US$750 million in 1999 to establish GAVI, with US$75 million per year and US$1 billion in 2010 to promote the Decade of Vaccines.

International conferences help to create a worldwide climate of advocacy for health issues. International sanitary conferences in the nineteenth century were convened in response to the cholera epidemics. International conferences continue in the twenty-first century to serve as venues for advocacy on a global scale, bringing forward issues in public health that are beyond the scope of individual nations. The WHO, UNICEF, and other international organizations perform this role on a continuing basis (see Chapter 16). Criticisms of this approach have focused on the lack of similar effort or donors to address NCDs, weak public health infrastructure, and that this frees national governments from responsibility to care for their own children. No one can question, however, that this kind of endeavor has saved countless lives and needs the backing of other aid donors and national government participation.

**Consumerism**

Consumerism is a movement that promotes the interests of the purchaser of goods or services. In the 1960s, a new form of consumer advocacy emerged from the civil rights and antwwar movement in the USA. Concern was focused on the environment, occupational health, and the rights of the consumer. Rachel Carson stimulated concern by dramatizing the effects of DDT on wildlife and the environment but inadvertently jeopardized anti-malarial efforts in many countries. This period gave rise to environmental advocacy efforts worldwide, and a political movement, the Greens, in Western Europe.

Ralph Nader showed the power of the advocate or “whistle-blower” who publicizes health hazards to stimulate active public debate on a host of issues related to the public well-being. Nader, a consumer advocate lawyer, developed a strategy for fighting against business and government activities and products which endangered public health and safety. His 1965 book *Unsafe at Any Speed* took issue with the US automobile industry for emphasizing profit and style over safety, and led to the enactment of the National Traffic and Motor Safety Act of 1966, establishing safety standards for new cars. This was followed by a series of enactments including design and emission standards and seat-belt regulations. Nader’s work continues to promote consumer interests in a wide variety of fields, including the meat and poultry industries, and coal mining, and promotes greater government regulatory powers regarding pesticide usage, food additives, consumer protection laws, rights to knowledge of contents, and safety standards.

Consumerism has become an integral part of free market economies, and the educated consumer does influence the quality, content, and price of products. Greater awareness of nutrition in health has influenced food manufacturers to improve packaging, content labeling, enrichment with vitamins and minerals, and advertisement to promote those values. Low-fat dietary products are available because of an increasingly sophisticated public concerned over dietary factors in cardiovascular diseases. The same process occurred in safe toys and clothing for children, automobile safety features such as mandatory use of car seats for infants, and other innovations that quickly became industry standards in the industrialized world. Dangerous practices such as the use of lead paint in toys and melamine contamination of milk products from China capture the public attention quickly and remind public health authorities of the importance of continuous alertness to potential hazards.

Consumerism can also be exploited by pharmaceutical companies with negative impacts on the health system, especially in the advertising of health products which leads to unnecessary visits to health providers and pressure for approval to obtain the product. The Internet has provided people with access to a vast array of information and opinion, and to current literature otherwise unavailable because of the often inadequate library resources of medical and other health professionals. The very freedom of information the Internet allows, however, also provides a vehicle for extremist and fringe groups to promote disinformation such as “vaccination causes autism, fluoridation causes cancer”, which can cause considerable difficulties for basic public health programs or lead to self-diagnosis of conditions, with often disastrous consequences.

Advocacy and voluntarism go hand in hand. Voluntarism takes many forms, including raising funds for the development of services or operating services needed in the community. It may take the form of fund-raising to build clinics or hospitals in the community, or to provide medical equipment for elderly or handicapped people; or retirees and teenagers working as hospital volunteers to provide services that are not available through paid staff, and to provide a
sense of community caring for the sick in the best traditions of religious or municipal concerns. This can also be extended to prevention, as in support for immunization programs, assistance for the handicapped and elderly in transportation, Meals-on-Wheels, and many other services that may not be included in the “basket of services” provided by the state, health insurance, or public health services.

Community involvement can take many forms, and so can voluntarism. The pioneering role of women’s organizations in promoting literacy, health services, and nutrition in North America during the latter part of the nineteenth and the early twentieth centuries profoundly affected the health of the population. The advocacy function is enhanced when an organization mobilizes voluntary activity and funds to promote changes or needed services, sometimes forcing official health agencies or insurance systems to revise their attitudes and programs to meet these needs.

THE HEALTH FIELD CONCEPT

By the early 1970s, Canada’s system of federally supported provincial health insurance plans covered all of the country. The federal Minister of Health, Marc Lalonde, initiated a review of the national health situation, in view of concern over the rapidly increasing costs of health care. This led to articulation of the “Health Field Concept” in 1974, which defined health as a result of four major factors: human biology, environment, behavior, and health care organization (Box 2.14). Lifestyle and environmental factors were seen as important contributors to the morbidity and mortality in modern societies. This concept gained wide acceptance, promoting new initiatives that emphasized health promotion in response to environmental and lifestyle factors. Conversely, reliance primarily on medical care to solve all health problems could be counterproductive. This concept was a fundamental contributor to the idea of health promotion later articulated in the Ottawa Declaration, discussed below.

The health field concept came at a time when many epidemiological studies were identifying risk factors for cardiovascular diseases and cancers that related to personal habits, such as diet, exercise, and smoking. The concept advocated that public policy needed to address individual lifestyle as part of the overall effort to improve health status. As a result, the Canadian federal government established health promotion as a new activity. This quickly spread to many other jurisdictions and gained wide acceptance in many industrialized countries.

Concern was expressed that this concept could become a justification for a “blame the victim” approach, in which those ill with a disease related to personal lifestyles, such as smokers or AIDS patients, are seen as having chosen to contract the disease. Such a patient might then be considered not to be entitled to all benefits of insurance or care that others may receive. The result may be a restrictive approach to care and treatment that would be unethical in the public health tradition and probably illegal in western jurisprudence. This concept was also used to justify withdrawal from federal commitments in cost sharing and escape from facing controversial health reform in the national health insurance program.

THE VALUE OF MEDICAL CARE IN PUBLIC HEALTH

During the 1960s and 1970s, outspoken critics of health care systems, such as Ivan Illytch, questioned the value of medical care for the health of the public. This became a widely discussed, somewhat nihilistic, view towards medical care, and was influential in promoting skepticism regarding the value of the biomedical mode of health care, and antagonism towards the medical profession.

In 1976, Thomas McKeown presented a historical-epidemiological analysis showing that up to the 1950s, medical care had only a limited impact on mortality rates, although improvements in surgery and obstetrics were notable. He showed that crude death rates in England averaged about 30 per 1000 population from 1541 to 1750, declining steeply to 22 per 1000 in 1851, 15 per 1000 in 1901, and 12 per 1000 in 1951, when medical care became truly effective. McKeown concluded that much of the improvement in health status over the past several centuries was due to reduced mortality from infectious diseases. This he related to limitation of family size, increased food supplies, improved nutrition and sanitation, specific preventive and therapeutic measures, and overall gains in quality of life for growing elements of the population. He cautioned against placing excessive reliance for health on medical care, much of which was of unproved effectiveness.

BOX 2.14 The Health Field Concept – Marc Lalonde

**Definition**

Health is a result of factors associated with genetic inheritance, the environment, and personal lifestyle and of medical care. Promotion of healthy lifestyles can improve health and reduce the need for medical care.

**Elements**

- Genetic and biological factors
- Behavioral and attitudinal factors (lifestyle)
- Environment, including economic, social, cultural, and physical factors
- The organization of health care systems

**Source:** Lalonde M. A new perspective on the health of Canadians: a working document. Ottawa: Information Canada; 1974. Available at: http://www.hc-sc.gc.ca/hcs-sss/com/led/lalonde-eng.php [Accessed 25 May 2012]
This skepticism of the biomedical model of health care was part of wider antiestablishment feelings of the 1960s and 1970s in North America. In 1984, Milton Roemer pointed out that the advent of vaccines, antibiotics, anti-hypertensives, and other medications contributed to great improvements in infant and child care, and in the management of infectious diseases, hypertension, diabetes, and other conditions. Therapeutic gains continue to arrive from teaching centers around the world. Vaccine, pharmaceutical, and diagnostic equipment manufacturers continue to provide important innovations that have major benefits, but also raise the cost of health care. The latter issue is one which has stimulated the search for reforms, and search for lower cost technologies such as in treatment of hepatitis C patients, a huge international public health issue.

The value of medical care to public health and vice versa has not always been clear, either to public health personnel or to clinicians. The achievements of modern public health in controlling infectious diseases, and even more so in reducing the mortality and morbidity associated with chronic diseases such as stroke and CHD, were in reality a shared achievement between clinical medicine and public health (see Chapter 5).

Preventive medicine has become part of all medical practice, with disease prevention through early diagnosis and health promotion through individual and community-focused activities. Risk factor evaluation determines appropriate screening and individual and community-based interventions. Medical care is crucial in controlling hypertension and in reducing the complications and mortality from CHD. New modalities of treatment are reducing death rates from first time acute myocardial infarctions. Better management of diabetes prevents the early onset of complications. At the same time, the contribution of public health to improving outcomes of medical care is equally important. Control of the vaccine-preventable diseases, improved nutrition, and preparation for motherhood contribute to improved maternal and infant outcomes. Promotions of reduced exposure to risk factors for chronic disease are a task shared by public health and clinical medical services. Both clinical medicine and public health contribute to improved health status. They are interdependent and rely on funding systems for recognition as part of the New Public Health.

**HEALTH TARGETS**

During the 1950s, many new management concepts emerged in the business community, such as “management by objective”, a concept developed by Peter Drucker at General Motors, with variants such as “zero-based budgeting” developed in the US Department of Defense (see Chapter 12). They focused the activities of an organization and its budget on targets, rather than on previous allocation of resources. These concepts were applied in other spheres, but they influenced thinking in health, whose professionals were seeking new ways to approach health planning. The logical application was to define health targets and to promote the efficient use of resources to achieve those targets. This occurred in the USA and soon afterwards in the WHO European Region. In both cases, a wide-scale process of discussion and consensus building was used before reaching definitive targets. This process contributed to the adoption of the targets by many countries in Europe as well as by states and many professional and consumer organizations. The USA developed national health objectives in 1979 for the year 1990 and subsequently for the year 2000, with monitoring of progress in their achievement and development of further targets for 2010 and now for 2020. Beginning in 1987, state health profiles are prepared by the Epidemiology Program Office of the Centers for Disease Control and Prevention based on 18 health indicators recommended by a consensus panel representing public health associations and organizations.

The eight MDGs adopted by the UN in 2000 include halving extreme poverty, reducing child mortality by two-thirds, improving maternal health, halting the spread of HIV/AIDS, malaria, and other diseases, and providing universal primary education, all by the target date of 2015. The MDGs form a common blueprint agreed to by all countries and the world’s leading development institutions. The process has galvanized unprecedented efforts to meet the needs of the world’s poorest, yet 2008 reviews of progress indicate that most developing nations will not meet the targets at current rates of progress.

The United Nations Development Programme (UNDP) Global Partnership for Development 2012 report on the MDGs states that if the national development strategies and initiatives are supported by international development partners, the goals can be achieved by 2015. The MDGs were adopted by over 120 nations and provided guidance for national policies and for international aid agencies. The focus was on middle- and low-income countries and their achievements have been considerable but variable (see Box 2.15 and Chapter 16). As of July 2012, extreme poverty was falling in every region, the poverty reduction target had been met, the world had met the target of halving the proportion of people without access to improved sources of water, and the world had achieved parity in primary education between girls and boys.

Further progress will require sustained political commitment to develop the primary care infrastructure: improved reporting and epidemiological monitoring, consultative mechanisms, and consensus by international agencies, national governments, and non-governmental agencies. The achievement of the targets will also require sustained international support and national commitment with all the difficulties of a time of economic recession. Nevertheless, defining a target is crucial to the process.
BOX 2.15 Achievements of Millennium Development Goals 2000–2012

- MDG1. Eradicate extreme hunger and poverty – The number of people living in extreme poverty and the poverty rates fell in every developing region, including in sub-Saharan Africa, where rates are highest. In the developing regions, the proportion of people living on less than $1.25 a day fell from 47 percent in 1990 to 24 percent in 2008. In 2008, about 110 million fewer people than in 2005 lived in conditions of extreme poverty.
- MDG2. Achieve universal primary education – In the developing regions, the net enrolment rate for children of primary school age rose from 82 percent to 90 percent between 1999 and 2010, mainly between 1999 and 2004, but has leveled off since.
- MDG3. Promote gender equality and empower women – By the end of January 2012, women accounted for 19.7 percent of parliamentarians worldwide. This amounts to nearly a 75 percent increase since 1995, when women held 11.3 percent of seats worldwide, and a 44 percent increase over the 2000 level.
- MDG4. Reduce child mortality – Progress on child mortality is gaining momentum. The target is to reduce by two-thirds, between 1990 and 2015, the under-5-year-old mortality rate, from 93 children of every 1000 dying to 31 of every 1000. Child deaths are falling, but much more needs to be done in order to reach the development goal. Revitalizing efforts against pneumonia and diarrhea, while bolstering nutrition, could save millions of children.
- MDG5. Improve maternal health – Maternal mortality has nearly halved since 1990, but levels are far removed from the 2015 target. The targets for improving maternal health include reducing by three-quarters the maternal mortality ratio and achieve universal access to reproductive health. Poverty and lack of education perpetuate high adolescent birth rates. Inadequate funding for family planning is a major failure in fulfilling commitments to improving women’s reproductive health.
- MDG6. Combat HIV/AIDS, malaria, tuberculosis, and other diseases – More people than ever are living with HIV owing to fewer AIDS-related deaths and the continued large number of new infections. In 2011, an estimated 34.2 million were living with HIV, up 17 percent from 2001. This persistent increase reflects the continued large number of new infections along with a significant expansion of access to lifesaving antiretroviral therapy, especially in more recent years.
- MDG7. Ensure environmental sustainability – The unparalleled success of the Montreal Protocol shows that action on climate change is within grasp. The 25th anniversary of the Montreal Protocol on Substances that Deplete the Ozone Layer, in 2012, had many achievements to celebrate. Most notably, there has been a reduction of over 98 percent in the consumption of ozone-depleting substances. Further, because most of these substances are also potent greenhouse gases, the Montreal Protocol has contributed significantly to the protection of the global climate system. The reductions achieved to date leave hydrochlorofluorocarbons (HCFCs) as the largest group of substances remaining to be phased out.
- MDG8. A global partnership for development – Core development aid fell in real terms for the first time in more than a decade, as donor countries faced fiscal constraints. In 2011, net aid disbursements amounted to $133.5 billion, representing 0.31 percent of developed countries’ combined national income. While constituting an increase in absolute dollars, this was a 2.7 percent drop in real terms over 2010. If debt relief and humanitarian aid are excluded, bilateral aid for development programmes and projects fell by 4.5 percent in real terms.

Source: United Nations Development Programme. The Millennium Development Goals Report 2012. Summary 2 July 2012. Available at: http://www.undp.org/content/undp/en/home/librarypage/mdg/the-millennium-development-goals-report-2012/ [Accessed 21 November 2012]. The full report is available at: http://www.undp.org/content/dam/undp/library/MDG/english/The_MDG_Report_2012.pdf [Accessed 21 November 2012].

There are encouraging signs that national governments are influenced by the general movement to place greater emphasis on resource allocation and planning on primary care to achieve internationally recognized goals and targets. The successful elimination of smallpox, rising immunization coverage in the developing countries, and increasing implementation of salt iodization have shown that such goals are achievable.

US Health Targets

While the USA has not succeeded in developing universal health care access, it has a strong tradition of public health and health advocacy. Federal, state, and local health authorities have worked out cooperative arrangements for financing and supervising public health and other services. With growing recognition in the 1970s that medical services alone would not achieve better health results, health policy leadership in the federal government formulated a new approach, in the form of developing specific health targets for the nation.

In 1979, the Surgeon General of the USA published the Report on Health Promotion and Disease Prevention (Healthy People). This document set five overall health goals for each of the major age groups for the year 1990, accompanied by 226 specific health objectives. New targets for the year 2000 were developed in three broad areas: to increase healthy lifespans, to reduce health disparities, and to achieve access to preventive health care for all Americans. These broad goals are supported by 297 specific targets in 22 health priority areas, each one divided into four major categories: health promotion, health protection, preventive services, and surveillance systems. This set the public health agenda on the basis of measurable indicators that can be assessed year by year.
Leading health indicators selected for 2010 incorporate the original 467 objectives in Healthy People 2010, which served as a basis for planning public health activities for many state and community health initiatives. For each of the leading health indicators, specific objectives and subobjectives derived from Healthy People 2010 are used to monitor progress. The specific objectives set for Healthy People 2020 are listed in Box 2.16. Thirteen new topic areas are listed for 2020, such as older adults, genomics, dementias, and social determinants of health. These provide guidelines for national, state, and local public health agencies as well as insurance providers, primary care services, and health promotion advocates. A key issue will be in reducing regional, ethnic, and socioeconomic health disparities.

The process of working towards health targets in the USA has moved down from the federal level of government to the state and local levels. Professional organizations, NGOs, as well as community and fraternal organizations are also involved. The states are encouraged to prepare their own targets and implementation plans as a condition for federal grants, and many states require county health departments to prepare local profiles and targets.

Diffusion of this approach encourages state and local initiatives to meet measurable program targets. It also sets a different agenda for local prestige in competitive terms, with less emphasis on the size of the local hospital or other agencies than on having the lowest infant mortality or the least infectious disease among neighboring local authorities.

European Health Targets

The WHO European Region document “Health 21 – Health for All in the 21st Century” addresses health in the twenty-first century, with 21 principles and objectives for improving the health of Europeans, within and between countries of Europe. The Health 21 targets include:

1. Closing the health gap between countries.
2. Closing the health gap within countries.
3. A healthy start in life (supportive family policies).
4. Health of young people (policies to reduce child abuse, accidents, drug use, and unwanted pregnancies).
5. Healthy aging (policies to improve health, self-esteem, and independence before dependence emerges).
6. Improving mental health.
7. Reducing communicable diseases.
8. Reducing non-communicable diseases.
9. Reducing injury from violence and accidents.
10. A healthy and safe physical environment.
11. Healthier living (fiscal, agricultural, and retail policies that increase the availability of and access to and consumption of vegetables and fruits).
12. Reducing harm from alcohol, drugs, and tobacco.
13. A settings approach to health action (homes should be designed and built in a manner conducive to sustainable health and the environment).

14. Multisectoral responsibility for health.
15. An integrated health sector and much stronger emphasis on primary care.
16. Managing for quality of care using the European health for all indicators to focus on outcomes and compare the effectiveness of different inputs.
17. Equitable and sustainable funding of health services.
18. Developing human resources (educational programs for providers and managers based on the principles of the Health for All policy).
19. Research and knowledge: health programs based on scientific evidence.
20. Mobilizing partners for health (engaging the media/television/Internet).
21. Policies and strategies for Health for All – national, targeted policies based on Health for All.

A 2010–2012 review has been commissioned by the European Office of the WHO to assess inequalities in the social determinants of health. While health has improved there are still significant inequalities. Factors include variance in local, regional, national, and global economic forces. The European Union and the European Region of WHO are both working on health targets for the year 2020.

UK Health Targets

There are competing demands in society for expenditure by the government, and therefore making the best use of resources – money and people – is an important objective. The UK has devolved many of the responsibilities to the constituent countries (England, Wales, Scotland, and Northern Ireland) within an overall national framework (Box 2.17).

**BOX 2.17 UK National Health Service Outcomes Framework 2013–2014 and Public Health Service Outcomes Framework 2013–2016**

The UK National Health Service (NHS) has semi-autonomous units in England, Scotland, Wales, and Northern Ireland. They are funded from the central UK NHS but with autonomy within national guidelines. The NHS has defined national health outcomes for improvements grouped around five domains, each comprised of key indicators aimed at improving health with reducing inequalities.

**NHS Domains**

- Ensuring that people have a positive experience of care:
  - improving people’s experience of outpatient care
  - improving hospital responsiveness to personal needs
  - improving people’s experience with accident and emergency services
  - improving women’s and their families’ experiences with maternity services
  - improving the experience of care for people at the end of their lives
  - improving experiences of health care for people with mental illness
  - improving children’s and young people’s experience of healthcare
  - improving people’s experience of integrated care.

- Treating and caring for people in a safe environment and protecting them from avoidable harm:
  - reducing the incidence of avoidable harm
  - improving the safety of maternity services
  - delivering safe care to children in acute settings.

**Public Health Domains**

- Determinants of health; improve wider factors that affect health and well-being, and health inequalities.
- Health improvement; help people to live healthy lifestyles, healthy choices, reduce health inequalities, protection from major incidents and other threats, while reducing health inequalities.
- Health care, public health and preventing premature mortality; reduce the numbers of people living with preventable ill-health and people dying prematurely, while reducing the gap between communities.

*Source:* UK Department of Health. Available at: [https://www.gov.uk/government/organisations/department-of-health/about/our-priorities](https://www.gov.uk/government/organisations/department-of-health/about/our-priorities), [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/127106/121109-NHS-Outcomes-Framework-2013-14.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/127106/121109-NHS-Outcomes-Framework-2013-14.pdf) [Accessed 24 June 2013].
PARTICIPATION IN HEALTH

National policy in health ultimately relates to health of the individual. The various concepts outlined in the health field concept, community-oriented primary health care, health targets, and effective management of health systems, can only be effective if the individual and his or her community are knowledgeable participants in seeking solutions. Involving the individual in his or her own health status requires raising levels of awareness, knowledge, and action. The methods used to achieve these goals include health counseling, health education, and health promotion (Figure 2.6).

Health counseling has always been a part of health care between the doctor or nurse and the patient. It raises levels of awareness of health issues of the individual patient. Health education has long been part of public health, dealing with promoting consciousness of health issues in selected target population groups. Health promotion incorporates the work of health education but takes health issues to the policy level of government and involves all levels of government and NGOs in a more comprehensive approach to a healthier environment and personal lifestyles.

Health counseling, health education, and health promotion are among the most cost-effective interventions for improving the health of the public. While costs of health care are rising rapidly, demands to control cost increases should lead to greater emphasis on prevention, and adoption of health education and promotion as an integral part of modern life. This should be carried out in schools, the workplace, the community, commercial locations (e.g., shopping centers), and recreation centers, and in the political agenda.

Psychologist Abraham Maslow described a hierarchy of needs of human beings. Every human has basic requirements including physiological needs of safety, water, food, warmth, and shelter. Higher levels of needs include recognition, community, and self-fulfillment. These insights supported observations of efficiency studies such as those of Elton Mayo in the famous Hawthorne effect in the 1920s, showing that workers increased productivity when acknowledged by management in the objectives of the organization (see Chapter 12). In health terms, these translate into factors that motivate people to positive health activities when all barriers to health care are reduced.

Modern public health faces the problem of motivating people to change behavior; sometimes this requires legislation, enforcement, and penalties for failure to comply, such as in mandating car seat-belt use. In other circumstances it requires sustained performance by the individual, such as the use of condoms to reduce the risk of STI and/or HIV transmission. Over time, this has been developed into a concept known as knowledge, attitudes, beliefs, and practices (KABP), a measurable complex that cumulatively affects health behavior (see Chapter 3). There is often a divergence between knowledge and practice; for example, the knowledge of the importance of safe driving, yet not putting this into practice. This concept is sometimes referred to as the “KABP gap”.

The health belief model has been a basis for health education programs, whereby a person’s readiness to take action for health stems from a perceived threat of disease, a recognition of susceptibility to disease and its potential severity, and the value of health. Action by an individual may be triggered by concern and by knowledge. Barriers to appropriate action may be psychological, financial, or physical, including fear, time loss, and inconvenience. Spurring action to avoid risk to health is one of the fundamental goals in modern health care. The health belief model is important in defining any health intervention in that it addresses the emotional, intellectual, and other barriers to taking steps to prevent or treat disease.

Health awareness at the community and individual levels depends on basic education levels. Mothers in developing countries with primary or secondary school education are more successful in infant and child care than less educated women. Agricultural and health extension services reaching out to poor and uneducated farm families in North America in the 1920s were able to raise consciousness of safe self-health practices and good nutrition, and when this was supplemented by basic health education in schools, generational differences could be seen in levels of awareness of the importance of balanced nutrition. Secondary prevention with diabetics and patients with CHD hinges on education and awareness of nutritional and physical activity patterns needed to prevent or delay a subsequent myocardial infarction.

Founding of Health Promotion: The Ottawa Charter of 1986

The WHO sponsored the First International Conference on Health Promotion held in Ottawa, Canada, in 1986 (Figure 2.7). The resulting Ottawa Charter defined health promotion and set out five key areas of action: building healthy public policy, creating supportive environments, strengthening community action, developing personal skills, and reorienting health services. The Ottawa Charter called on all countries to put health on the agenda of policy makers in all sectors and at all levels, directing them to be aware...
of the health consequences of their decisions and to accept responsibility for health. Health promotion policy combines diverse but complementary approaches, including legislation, fiscal measures, taxation, and organizational change. It is a coordinated action that leads to health, income, and social policies that foster greater equity. Joint action contributes to ensuring safer and healthier goods and services, healthier public services, and cleaner, more enjoyable environments. Health promotion policies require the identification of obstacles to the adoption of healthy public policies in non-health sectors, and ways of removing them.

Built on progress made from the Declaration on Primary Health Care at Alma-Ata, the aim was to make the healthier choice the easier choice for policy makers as well. The logo of the Ottawa Charter has been maintained by the WHO as the symbol and logo of health promotion. Health promotion represents activities to enhance and embed the concept of building healthy public policy through:

- building healthy public policy in all sectors and levels of government and society
- enhancing both self help and social support
- developing personal skills through information and education for health
- enabling, mediating, and advocating healthy public policy in all spheres
- creating supportive environments of mutual help and conservation of the natural environment
- reorienting health services beyond providing clinical curative services with linkage to broader social, political, economic, and physical environmental components.

(Adapted from Ottawa Charter; Health and Welfare Canada and World Health Organization, 1986)

**State and Community Models of Health Promotion**

An effective approach to health promotion was developed in Australia where, in the state of Victoria, revenue from a cigarette tax has been set aside for health promotion purposes. This has the effect of discouraging smoking, and at the same time finances health promotion activities and provides a focus for health advocacy in terms of promoting cessation of cigarette advertising at sports events or on television. It also allows for assistance to community groups and local authorities to develop health promotion activities at the workplace, in schools, and at places of recreation. Health activity in the workplace involves reduction of work hazards as well as promotion of a healthy diet and physical fitness, and avoidance of risk factors such as smoking and alcohol abuse.

In the Australian model, health promotion is not only the persuasion of people to change their life habits; it also
involves legislation and enforcement towards environmental changes that promote health. For example, this involves mandatory filtration, chlorination, and fluoridation for community water supplies, vitamin and mineral enrichment of basic foods. Primary Care alliances of service providers are organized including hospitals, community health services serving a sub-district population for more efficient and comprehensive care. These are at the level of national or state policy, and are vital to a health promotion program and local community action.

Community-based programs to reduce chronic disease using the concept of community-wide health promotion have developed in a wide variety of settings. Such a program to reduce risk factors for cardiovascular disease was pioneered in the North Karelia Project in Finland. This project was initiated as a result of pressures from the affected population of the province, which was aware of the high incidence of mortality from heart disease. Finland had the highest rates of CHD in the world and in the rural area of North Karelia the rate was even higher than the national average. The project was a regional effort involving all levels of society, including official and voluntary organizations, to try to reduce risk factors for CHD. After 15 years of follow-up, there was a substantial decline in mortality with a similar decline in a neighboring province taken for comparison, although the decline began earlier in North Karelia.

In many areas where health promotion has been attempted as a strategy, community-wide activity has developed with participation of NGOs or any valid community group as initiators or participants. Healthy Heart programs have developed widely with health fairs, sponsored by charitable or fraternal societies, schools, or church groups, to provide a focus for leadership in program development. A wider approach to addressing health problems in the community has developed into an international movement of “Healthy Cities”.

Healthy Cities/Towns/Municipalities

Following deliberations of the Health of Towns Commission chaired by Edwin Chadwick, the Health of Towns Association was founded in 1844 by Southwood Smith, a prominent reform leader of the sanitary movement, to advocate change to reduce the terrible living conditions of much of the population of cities in the UK. The association established branches in many cities and promoted sanitary legislation and public awareness of the “sanitary idea” that overcrowding, inadequate sanitation, and absence of safe water and food created the conditions under which epidemic disease could thrive.

In the 1980s, Iona Kickbush, Trevor Hancock, and others promoted renewal of the idea that local authorities have a responsibility to build health issues into their planning and development processes. This “Healthy Cities” approach promotes urban community action on a broad front of health promotion issues (Table 2.2). Activities include environmental projects (such as recycling of waste products), improved recreational facilities for young people to reduce violence and drug abuse, health fairs to promote health awareness, and screening programs for hypertension, breast cancer, and other diseases. It combines health promotion with consumerism and returns to the tradition of local public health action and advocacy.

The municipality, in conjunction with many NGOs, develops a consultative process and program development approach to improving the physical and social life of the urban environment and the health of the population. In 1995, the Healthy Cities movement involved 18 countries with 375 cities in Europe, Canada, the USA, the UK, South America, Israel, and Australia, an increase from 18 cities in 1986. The model now extends to small municipalities, often with populations of fewer than 10,000. Networks of healthy cities are the backbone of the movement, with more than 1400 member towns and cities across Europe.

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### TABLE 2.2 Core Themes of Phase V of the World Health Organization European Healthy Cities Network

| Core Themes of Phase V | Description |
|------------------------|-------------|
| 1. Creating caring and supportive environments | A healthy city is a city for all its citizens: inclusive, supportive, sensitive and responsive to their diverse needs and expectations. |
| 2. Healthy living | A healthy city provides conditions and opportunities that encourage, enable and support healthy lifestyles for people of all social groups and ages. |
| 3. Healthy urban environment and design | A healthy city offers a physical and built environment that encourages, enables and supports health, recreation and well-being, safety, social interaction, accessibility and mobility, a sense of pride and cultural identity and is responsive to the needs of all its citizens. |

World Health Organization. WHO European Healthy Cities Network: goals and requirements Phase V (2009–2013). Available at: http://www.euro.who.int/__data/assets/pdf_file/0009/100989/92260.pdf [Accessed 19 November 2012].

Sources: World Health Organization. Zagreb Declaration of Healthy Cities: Health and health equity in all local policies. Copenhagen: WHO Regional Office for Europe; 2009. Available at: http://www.euro.who.int/__data/assets/pdf_file/0015/101076/E92343.pdf [Accessed 19 November 2012].
A typical healthy city has a population in the multiple thousands, often multilingual, with an average middle-class income. A Healthy Cities project builds a coalition of municipal and voluntary groups working together in a continuing effort to improve quality of service, facilities, and living environment. The city is divided into neighborhoods, engaged in a wide range of activities fostered by the project. Municipalities have traditionally had a leading role in sanitation, safe water supply, building and zoning laws and regulation, and many other responsibilities in public health (see Chapter 10). The Healthy Cities or Communities movement has elevated this to a higher level with policies to promote health in all actions. Some examples are listed of municipal, advocacy group, and higher governmental activities for healthier city environments:

- improved public transport
- developing sanitation, water supply, and waste disposal in urban slums
- traffic circles, crosswalks, and road bumps to slow urban vehicle traffic and improve pedestrian safety
- nuisance abatement in local quarries
- encouraging business enterprise for healthy food markets and local services in low-income areas
- parks, tree planting, and home gardens in poor and low-income neighborhoods and schools
- physical and security improvements to primary and secondary schools
- monitoring neighborhood profiles of social and crime indicators
- promoting preschool, primary and secondary school improvement
- cooperative housing for low-income families
- intercultural communication
- recreational facilities for young people
- restoration of neglected sites – green spaces
- extension of public parks, with improved walking and bicycle trails
- youth and community activities
- reduction of drug and crime environment through community policing and social support
- safe houses for battered women and homeless people
- community centers for older adults
- encouraging private enterprises and individuals in environmentally friendly planning, building, energy supply and conservation
- developing and supporting community health centers in urban slums
- reducing barriers for physically disabled people in public spaces and buildings
- reducing the stigma associated with mental illness and handicaps.

Working with senior levels of government, other departments in the municipalities, religious organizations, private donors, and the NGO sector to innovate and especially to improve conditions in poverty-afflicted areas of cities is a vital role for health-oriented local political leadership.

**HUMAN ECOLOGY AND HEALTH PROMOTION**

Human ecology, a term introduced in the 1920s and revived in the 1970s, attempted to apply theory from plant and animal life to human communities. It evolved as a branch of demography, sociology, and anthropology, addressing the social and cultural contexts of disease, health risks, and human behavior. Human ecology addresses the interaction of humans with and adaptation to their social and physical environment.

Parallel subdisciplines of social, community, and environmental psychology, medical sociology, anthropology, and other social sciences contributed to the development of this academic field with wide applications in health-related issues. This led to the incorporation of qualitative research methods alongside the quantitative research methods traditionally emphasized in public health, providing crucial insights into many public health issues where human behavior is a key risk factor.

Health education developed as a discipline and function within public health systems in school health, rural nutrition, military medicine, occupational health, and many other aspects of preventive-oriented health care, and is discussed in later chapters of this text. Directed at behavior modification through information and raising awareness of consequences of risk behavior, this has become a longstanding and major element of public health practice in recent times, being almost the only effective tool to fight the epidemic of HIV and the rising epidemic of obesity and diabetes.

Health promotion as an idea evolved, in part, from Marc Lalonde’s Health Field Concepts and from growing realization in the 1970s that access to medical care was necessary but not sufficient to improve the health of a population. The integration of the health behavior model, social ecological approach, environmental enhancement, or social engineering formed the basis of the social ecology approach to defining and addressing health issues (Table 2.3).

Individual behavior depends on many surrounding factors, while community health also relies on the individual; the two cannot be isolated from one another. The ecological perspective in health promotion works towards changing people’s behavior to enhance health. It takes into account factors not related to individual behavior, which are determined by the political, social, and economic environment. It applies broad community, regional, or national approaches that are needed to address severe public health problems, such as controlling HIV infection, TB, malnutrition, STIs, cardiovascular disorders, violence and trauma, and cancer.
Chapter 2  Expanding the Concept of Public Health

DEFINING PUBLIC HEALTH STANDARDS

The APHA’s formulation of the public health role in 1995, entitled The Future of Public Health in America, was presented at the annual meeting in 1996. The APHA periodically revises standards and guidelines for organized public health services provided by federal, state, and local governments (Table 2.4). These reflect the profession of public health as envisioned in the USA where access to medical care is limited for large numbers of the population because of a lack of universal health insurance. Public health in the USA has been very innovative in determining risk groups in need of special care and finding direct and indirect methods of meeting those needs.

European countries such as Finland have called for setting public health into all public policy, which reflects the vital role that local and county governments can play in developing health-oriented policies. These include policies in housing, recreation, regulation of industrial pollution, road safety, promotion of smoke-free environments, bicycle paths, health impact assessment, and many other applications of health principles in public policy.

INTEGRATIVE APPROACHES TO PUBLIC HEALTH

Public health involves both direct and indirect approaches. Direct measures in public health include immunization of children, modern birth control, and chronic disease case finding – hypertension, diabetes, and cancer. Indirect methods used in public health protect the individual by community-wide means, such as raising standards of environmental safety, ensuring a safe water supply, sewage disposal, and improved nutrition (Box 2.18).

In public health practice, the direct and indirect approaches are both relevant. To reduce morbidity and mortality from diarrheal diseases requires an adequate supply of safe water and waste disposal, and also education of the individual in hygiene and the mother in use of ORT, and rotavirus vaccination of all children. The targets of public health action therefore include the individual, family, community, region, or nation, as well as a functioning and health system adopting current best practices for health care and health protection.

The targets for protection in infectious disease control are both the individual and the total group at risk. For vaccine-preventable diseases, immunization protects the individual but also has an indirect effect by reducing the risk even for non-immunized persons. In control of some diseases, individual case finding and management reduce risk of the disease in others and the community. For example, TB requires case finding and adequate care among high-risk groups as a key to community control. In malaria control, case finding and treatment are essential together with environmental action to reduce the vector population, to prevent transmission of the organism by the mosquito to a new host.

Control of NCDs, where there is no vaccine for mass application, depends on the knowledge, attitudes, beliefs, and practices of individuals at risk. In this case, the social

### TABLE 2.3 Health Promotion Approaches: Behavior Modification, Environment Enhancement, and Social Ecology

| Health Behavior Model Change and Lifestyle Modification | Social Ecological Approaches | Environment Enhancement: National, Municipal, and Community Based |
|--------------------------------------------------------|-------------------------------|---------------------------------------------------------------|
| Behavior modification                                   | Cultural change models of health | Universal access to health care                                |
| Social learning theory                                  | Biopsychosocial models of health | Environmental health                                           |
| Health belief model                                     | Stressful life events          | Industrial hygiene                                             |
| Theory of reasoned action                               | Ecology of human development  | Social security                                                |
| Theory of planned behavior                              | Public health psychology       | Societal support                                               |
| Risk perception theory                                  | Medical sociology              | Community support                                              |
| Fear arousal                                            | Ethnography                    | Ergonomics/human factors                                       |
| Protection–motivation theory                            | Social epidemiology            | Health monitoring epidemiology                                 |
| Health communications                                   | Social ecology of health       | Urban planning, architecture                                   |
| Mass media                                              | Community health promotion     | Regulation of housing, zoning                                  |
|                                                         | Public policy initiatives      | Injury and disaster control                                    |
|                                                         | Healthy communities            | Food and drug control                                         |
|                                                         |                                | Nutrition and food fortification                               |

American Public Health Association. 10 Essential public health services, 2012. Available at: [http://www.apha.org/programs/standards/performancestandards-program/resessentialservices.htm](http://www.apha.org/programs/standards/performancestandards-program/resessentialservices.htm) [Accessed 17 November 2012].

Source: Modified from Stokols D. Translating social ecological theory into guidelines for community health promotion. Am J Health Promot 1996;10:282–98.
context is of importance, as is the quality of care to which the individual has access. Control and prevention of non-infectious diseases involve strategies using individual and population-based methods. Individual or clinical measures include professional advice on how best to reduce the risk of the disease by early diagnosis and implementation of appropriate therapy. Population-based measures involve indirect measures with government action banning cigarette advertising, or direct taxation on cigarettes. Mandating food quality standards, such as limiting the fat content of meat, and requiring food labeling laws are part of the control of cardiovascular diseases.

The way individuals act is central to the objective of reducing disease, because many non-infectious diseases are dependent on behavioral risk factors of the individual’s choosing. Changing the behavior of the individual means addressing the way a person sees his or her own needs. This can be influenced by the provision of information, but how someone sees his or her own needs is more complex than that. An individual may define needs differently from the society or the health system. Reducing smoking among women may be difficult to achieve if smoking is thought to reduce appetite and food intake, given the social message that “slim is beautiful”. Reducing smoking among young people is similarly difficult if smoking is seen as fashionable and diseases such as lung cancer seem very remote.

Recognizing how individuals define needs helps the health system to design programs that influence behavior that is associated with disease.

Public health has become linked to wider issues as health care systems are reformed to take on both individual and population-based approaches. Public health and mainstream medicine have found increasingly common ground in addressing the issues of chronic disease, growing attention to health promotion, and economics-driven health care reform. At the same time, the social ecology approaches have shown success in slowing major causes of disease, including heart disease and AIDS, and the biomedical sciences have provided major new technology for preventing major health problems, including cancer, heart disease, genetic disorders, and infectious diseases.

Technological innovations unheard of just a few years ago are now commonplace, in some cases driving up costs of care and in others replacing older and less effective care. At the same time, resistance of important pathogenic microorganisms to antibiotics and pesticides is producing new challenges from diseases once thought to be under control, and newly emerging infectious diseases challenge the entire health community. New generations of antibiotics, antidepressants, antihypertensive medications, and other treatment methods are changing the way many conditions are treated. Research and development in the biomedical

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**TABLE 2.4 Vision, Mission, and Standards for Public Health Services, American Public Health Association**

| Vision | Excellence in Public Health Practice defined by recognized Performance Standards |
|--------|----------------------------------------------------------------------------------|
| Mission | To improve the quality of public health practice and performance of public health systems |
| Goals  | 1. Provide performance standards for public health systems and encourage their widespread use |
|        | 2. Encourage and leverage national, state, and local partnerships to build a stronger foundation for public health preparedness |
|        | 3. Promote continuous quality improvement of public health systems |
|        | 4. Strengthen the science base for public health practice improvement |
| Essential services | 1. Monitor health status to identify community health problems |
|        | 2. Diagnose and investigate health problems and health hazards in the community |
|        | 3. Inform, educate, and empower people about health issues |
|        | 4. Mobilize community partnerships to identify and solve health problems |
|        | 5. Develop policies and plans that support individual and community health efforts |
|        | 6. Enforce laws and regulations that protect health and ensure safety |
|        | 7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable |
|        | 8. Assure a competent public health and personal health care workforce |
|        | 9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services |
|        | 10. Research for new insights and innovative solutions to health problems |

Centers for Disease Control and Prevention. Ten great public health achievements – United States, 2001–2010. MMWR Morb Mortal Wkly Rep 2011;60:619–23.

Sources: American Public Health Association. Vision, mission and goals [posted 23 July 2012]. Available at: http://www.apha.org/programs/standards/performancestandardsprogram/resmission.htm [Accessed 17 November 2012].
BOX 2.18 Why Health Systems Matter to the Social Determinants of Health Inequity

General Population Benefits
Health systems offer general population benefits that go beyond preventing and treating illness. Appropriately designed and managed, they:

- Provide a vehicle to improve people’s lives, protecting them from the vulnerability of sickness, generating a sense of life security, and building common purpose within society
- Ensure that all population groups are included in the processes and benefits of socioeconomic development
- Generate the political support needed to sustain them over time.

Promote Health Equity
Health systems promote health equity when their design and management specifically consider the circumstances and needs of socially disadvantaged and marginalized populations, including women, the poor, and groups who experience stigma and discrimination, enabling social action by these groups and the civil society organizations supporting them.

Contribute to Achieving the Millennium Development Goals
Health systems can, when appropriately designed and managed, contribute to achieving the Millennium Development Goals.

Source: Gilson L, Doherty J, Loewenson R, Francis V. Final report – Knowledge Network on Health Systems – June 2007. WHO Commission on Social Determinants of Health (CSDOH); 2007. Available at: http://www.who.int/social_determinants/resources/csdh_media/hskn_final_2007_en.pdf [Accessed 21 November 2012].

The technological and organizational revolutions in health care are accompanied by many ethical, economic, and legal dilemmas. The choices in health care include heart transplantation, an expensive life-saving procedure, which may compete with provision of funds and labor resources for immunizations for poor children or for health promotion to reduce smoking and other risk factors for chronic disease. New means of detecting and treating acute conditions such as myocardial infarction and peptic ulcers are reducing hospital stays, and improving long-term survival and quality of life. Imaging technology has been an important development in medicine since the advent of X-rays in the early twentieth century. Technology has forged ahead with high-technology instruments and procedures, new medication, genetic engineering, and important low-technology gains such as impregnated bed nets, simplified tests for HIV and TB, and many other “game changers”. New technologies that can enable lower cost diagnostic devices, electronic transmission, and distant reading of transmitted imaging all open up possibilities for advanced diagnostic capacities in rural and less developed countries and communities. Molecular biology has provided methods of identifying and tracking movement of viruses such as polio and measles from place to place, greatly expanding the potential for appropriate intervention.

The choices in resource allocation can be difficult. In part, these add political commitment to improve health, competent professionally trained public health personnel, the public’s level of health information, and legal protection, whether through individuals, advocacy, or regulatory approaches for patients’ rights. These are factors in a widening methodology of public health.

ACHIEVEMENTS OF PUBLIC HEALTH
The Centers for Disease Control and Prevention (Morbidity and Mortality Weekly Report) in 1999 summarized 10 great achievements of public health in the USA, with an extension of the lifespan by over 30 years and improvements in many measures of quality of life. They were updated in a similar summary report in 2011, showing continuous progress, and a global version which was also encouraging in its scope of progress (Table 2.5). These achievements were also seen in all developed countries over the past century and are beginning to be seen in developing countries as well. They reflect a successful application of a broad approach to prevention and health promotion along with improved medical care and growing access to its benefits. In the past several decades alone, major new innovations are leading to greater control of cardiovascular disease, cancer prevention, and many other improvements to health affecting hundreds of millions of people. A similar 2011 report by the CDC shows global progress in the first decade of the twenty-first century, while MDG reports show progress on all eight target topics, although not at uniformly satisfactory rates. These achievements are discussed throughout this text.

This successful track record is very much at the center of a New Public Health involving a wide range of programs and activities, shown to be feasible and benefiting from continuing advances in science and understanding of social and management issues affecting health care systems worldwide.

THE FUTURE OF PUBLIC HEALTH
Public health issues have received new recognition in recent years because of a number of factors, including a growing understanding among the populace at different levels in different countries that health behavior is a factor in health status and that public health is vital for protection against natural or human-made disasters. The challenges are also increasingly understood: preparation for bioterrorism, avian influenza, rising rates of diabetes and obesity, high mortality rates from cancer, and a wish for prevention to be effective.
The MDGs selected by the UN in 2000 have eight global targets for the year 2015, including four directly related to public health (discussed above, Box 2.15). These are a recognition and a challenge to the international community and public health as a profession and as organized systems. Formal education in newly developing schools of public health is increasing in Europe, including many countries of Eastern Europe, and beginning to develop in India and sub-Saharan Africa. But there is delay in establishing centers of postgraduate education and research in many developing countries which are concentrating their educational resources on training physicians. Many physicians from developing nations are moving to the developed countries, which have become dependent on these countries for a significant part of their supply of medical doctors. Progress in implementation of the MDGs is mixed in sub-Saharan Africa, making some progress in immunization, but falling back on other goals. Proposals to renew global health targets following the 2015 end-stage of the MDG health goals will need to add a focus on NCDs, which account for 60 percent of global deaths, including 8.1 million premature deaths below the age of 60 (UNDP).

Economic growth has been hampered by the global recession since 2008, which will affect continued progress with many other factors of changing population dynamics, the economics of prevention versus expensive treatment costs, and the high costs of health care. Environmental degradation with high levels of carbon dioxide contamination is a growing concern, with disastrous global warming and consequent effects of drought, flooding, hurricane, and elevated particulate matter-induced asthma and effects on cardiovascular disease. The potential for the development of basic and medical sciences in genetics, nanotechnology, and molecular biology shows enormous promise for health benefits as yet unimagined.

At the same time, the effectiveness of health promotion has shown dramatic successes in reducing the toll of AIDS, reducing smoking, and increasing consciousness of nutrition and physical fitness in the population, and of the tragic effects of poverty and poor education on health status. The ethics of public health issues are complex and changing with awareness that failure to act on strong evidence-based policies is itself ethically problematic. The future of public health is not as a solo professional sector; it is at the heart of health systems, without which societies are open to chronic and infectious diseases that are preventable, affecting the society as a whole in economic and development matters.

There is an expanding role of private donors in global health efforts, such as the Rotary Club and the polio eradication program, GAVI with immunization and bed-nets in sub-Saharan Africa, and bilateral donor countries’ help in reducing the toll of AIDS in sub-Saharan Africa.

**THE NEW PUBLIC HEALTH**

The New Public Health has emerged as a concept to meet a whole new set of conditions, associated with increasing longevity and aging of the population, with the post-World War II baby-boom generation reaching the over-65 age group facing the growing importance of chronic diseases. Inequalities in health exist in and between affluent and developing societies, as well as within countries, even those having advanced health care systems. Regional inequalities are seen across the European Region in an east–west gradient and globally a north–south divide of extremes of inequality. The global environmental and ecological degradation and pollution of air and water present grave challenges for developed and developing countries worldwide. Yet optimism can be derived from proven track records of

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**TABLE 2.5 Great Achievements of Public Health in the USA, 1900–1999 and 2001–2010**

| 1900–1999                      | 2001–2010                      |
|-------------------------------|-------------------------------|
| Vaccination                   | Vaccine-preventable diseases   |
| Motor-vehicle safety          | Prevention and control of infectious diseases |
| Safer workplaces              | Tobacco control                |
| Control of infectious diseases | Maternal and infant health     |
| Decline in deaths from coronary heart disease and stroke | Motor vehicle safety |
| Safer and healthier foods     | Cardiovascular disease prevention |
| Healthier mothers and babies  | Occupational safety            |
| Family planning               | Cancer prevention              |
| Fluoridation of drinking water| Childhood lead poisoning prevention |
| Recognition of tobacco use as a health hazard | Public health preparedness and response |

Sources: Centers for Disease Control and Prevention. Ten great public health achievements – United States, 1900–1999. MMWR Morb Mortal Wkly Rep 1999;48:1141–7.
success in public health measures that have already been implemented. Many of the underlying factors are amenable to prevention through social, environmental, or behavioral change and effective use of medical care.

The New Public Health idea has evolved since Alma-Ata, which articulated the concept of Health for All, followed by a trend in the late 1970s to Health in All policies and establishing health targets as a basis for health planning. During the late 1980s and early 1990s, the debate on the future of public health in the Americas intensified as health professionals looked for new models and approaches to public health research, training, and practice. This debate helped to redefine traditional approaches of social, community, and preventive medicine. The search for the “new” in public health continued with a return to the Health for All concept of Alma-Ata (renewed in 2008) and a growing realization that the health of both the individual and the society involves the management of personal care services and community prevention, with a comprehensive approach taking advantage of advancing technology and experience of best practices globally.

The New Public Health is an extension of the traditional public health. It describes organized efforts of society to develop healthy public policies: to promote health, to prevent disease, and to foster social equity within a framework of sustainable development. A new, revitalized public health must continue to fulfill the traditional functions of sanitation, protection, and related regulatory activities, but in addition to its expanded functions. It is a widened philosophy and practical application of many different methods of addressing health, and preventing disease and avoidable death. It necessarily addresses inequities so that programs need to meet special needs of different groups in the population according to best standards, limited resources, and population needs. It is proactive and advocates interventions within legal and ethical limits to promote health as a value in and of itself and as an economic gain for society as well as for its individual members.

The New Public Health is a comprehensive approach to protecting and promoting the health status of the individual and the society, based on a balance of sanitary, environmental, health promotion, personal, and community-oriented preventive services, coordinated with a wide range of curative, rehabilitative, and long-term care services. It evolves with new science, technology, and knowledge of human and systems behavior to maximize health gains for the individual and the population.

The New Public Health requires an organized context of national, regional, and local governmental and non-governmental programs with the object of creating healthful social, nutritional, and physical environmental conditions. The content, quality, organization, and management of component services and programs are all vital to its successful implementation.

Whether managed in a diffused or centralized structure, the New Public Health requires a systems approach acting towards achievement of defined objectives and specified targets. The New Public Health works through many channels to promote better health. These include all levels of government and parallel ministries; groups promoting advocacy, academic, professional, and consumer interests; private and public enterprises; insurance, pharmaceutical, and medical products industries; the farming and food industries; media, entertainment, and sports industries; legislative and law enforcement agencies; and others.

The New Public Health is based on responsibility and accountability for defined populations in which financial systems promote achievement of these targets through effective and efficient management, and cost-effective use of financial, human, and other resources. It requires continuous monitoring of epidemiological, economic, and social aspects of health status as an integral part of the process of management, evaluation, and planning for improved health.

The New Public Health provides a framework for industrialized and developing countries, as well as countries in political–economic transition such as those of the former Soviet system. They are at different stages of economic, epidemiological, and sociopolitical development, each attempting to ensure adequate health for its population with limited resources. The challenges are many, and affect all countries with differing balances, but there is a common need to seek better survival and quality of life for their citizens (Table 2.6).

**SUMMARY**

The object of public health, like that of clinical medicine, is better health for the individual and for society. Public health works to achieve this through indirect methods, such as by improving the environment, or through direct means such as preventive care for mothers and infants or other at-risk groups. Clinical care focuses directly on the individual patient, mostly at the time of illness. But the health of the individual depends on the health promotion and social programs of the society, just as the well-being of a society depends on the health of its citizens. The New Public Health consists of a wide range of programs and activities that link individual and societal health.

The “old” public health was concerned largely with the consequences of unhealthy settlements and with safety of food, air, and water. It also targeted the infectious, toxic, and traumatic causes of death, which predominated among young people and were associated with poverty.

A summary of the great achievements of public health in the twentieth and in the early twenty-first century in the industrialized world is included in Chapter 1 and throughout this text. These achievements are reflective of public health gains throughout the industrialized world and are
| Classical Public Health | Social Ecology | Biomedical Care | Organization and Financing |
|------------------------|---------------|----------------|---------------------------|
| **To End of Nineteenth Century** |
| Food and personal hygiene | Church and serfdom | Basic sciences | Private payment for rich |
| Settlement health | Renaissance | Clinical sciences | Municipal doctors for poor |
| Quarantine | Agricultural revolution | Medical education | Charity, church, voluntary hospital care |
| Nutrition/fitness | Improved nutrition | Hospitals: church, municipal, voluntary, university | Guilds, mutual benefit, friendly societies for medical, pensions, burial benefits |
| Vital statistics | Rise of cities | Specialization | National health insurance for workers |
| Epidemiology | Rights of man | Therapeutics | Sick funds and voluntary health insurance |
| Miasma theory | Industrial revolution | Antisepsis | Sanitation |
| Municipal organization | Labor laws | | Municipal sanitation |
| Bacteriology, germ theory | Universal education | | |
| Vaccines, immunology | Social reform | Vaccines, antitoxins | |
| Control of infectious diseases | Political revolution | Antibiotics | |
| Maternal and child health | Information revolution | | |

| **To the 1980s** |
| Epidemiological transition | Aging of population | Advancing medical sciences | Collective bargaining health benefits |
| Declining mortality and birth rates, aging of population | Rising expectations | Clinical specialization | Government responsibility |
| Demographic transition | Lifestyle and risk factors | Diagnostics, imaging, laboratory technology | National health insurance or national health service |
| Decreasing infectious disease | Social inequities | Therapeutics, antibiotics, antihypertensives, cardiac, psychotropic drugs | Rising costs of health care |
| Increase in non-infectious disease | Social security | Preventive medicine | Imbalance of hospital and primary care |
| International health | The welfare state | Home care | Health maintenance organizations |
| Eradication of smallpox | Governmental responsibility for health | Long-term care | Cost–benefit evaluation |
| Alma-Ata | Advocacy | Hospital versus community care | Rationalization |
| Ottawa Charter | Health promotion | Ambulatory surgery | Reforms |

| **1980 and Beyond: The New Public Health** |
| Policy coordination | National health policy | University medical schools | National health targets |
| Evaluation of health status | Resource allocation | Postgraduate education | Decentralization/diffusion of implementation |
| Health promotion | Economic development | Health management training | District health systems |
| Regulation of food, drugs, water, worksite, toxic agents, trauma, | Social context | Peer review systems | Managed care systems (HMOs) |
| Communicable disease control | Social security | Accreditation | Modified market mechanisms, regulation of supply, incentives, fee control, competition, managed care |
| Control non-communicable diseases | Ecology and environment | Quality of care (TQM) | Management accountability |
| Reduce risk factors | Nutrition and food policy | Targeted research | Economic assessment |
beginning to affect the health situation in countries in transition from the socialist period. Countries emerging from developing status are also showing signs of mixed progress in the dual burden of infectious and maternal/child health issues, along with growing exposure to the chronic diseases of developed nations such as cardiovascular diseases, obesity, and diabetes.

The New Public Health synthesizes traditional public health with management of personal services and community action for a holistic approach. Evaluation of cost-effective public health and medical interventions to reduce the burden of disease also contributes to the need to seek and apply new approaches to health. The New Public Health will continue to evolve as a framework drawing on new ideas, science, technology, and experiences in public health throughout the world. It must address the growing recognition of social inequality in health, even in developed countries with universal health programs with improved education and social support systems.

NOTE
For a complete bibliography and guidance for student reviews and expected competencies please see companion web site at http://booksite.elsevier.com/9780124157668

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