PART I

Systems Foundations

Chapter 2

Beliefs, Values, and Health

Learning Objectives

- To study the concepts of health and disease, risk factors, and the role of health promotion and disease prevention
- To summarize the disease prevention requisites under the Affordable Care Act
- To get an overview of public health and appreciate its expanding role in health protection both in the United States and globally
- To explore the determinants of health, and measures related to health
- To understand the American anthro-cultural values and their implications for health care delivery
- To evaluate justice and equity in health care according to contrasting theories
- To explore the integration of individual and population health

"This is the market justice system. Social justice is over there."

Introduction

From an economic perspective, curative medicine appears to produce decreasing returns in health improvement while increasing health care expenditures (Saward and Sorensen 1980). There has also been a growing recognition of the benefits to society from the promotion of health and prevention of disease, disability, and premature death. However, progress in this direction has been slow because of the prevailing social values and beliefs that still focus on curing diseases rather than promoting health. The common definitions of health, as well as measures for evaluating health status, reflect similar inclinations. This chapter proposes a balanced approach to health, although fully achieving such an ideal is not without difficult challenges. The 10-year *Healthy People* initiatives, undertaken by the US Department of Health and Human Services (DHHS) since 1980, illustrate steps taken in this direction, even though these initiatives have been typically strong in rhetoric but weak in actionable strategies and sustainable funding.

Anthro-cultural factors reflected in the beliefs and values ingrained in the American culture have been influential in laying the foundations of a system that has remained predominantly private, as opposed to a tax-financed national health care program. Discussion on this theme begins in this chapter and continues in Chapter 3, where failures of past proposals to create a nationalized health care system are discussed in the context of cultural beliefs and values.

This chapter further explores the issue of equity in the distribution of health services, using the contrasting theories of market justice and social justice. US health care delivery incorporates both principles, which are complementary in some ways and create conflicts in other areas. The Affordable Care Act (ACA) tilts the system more toward a social justice orientation, places a greater emphasis on preventive services, but does not quite promise to achieve equitable access to health care for all Americans.

Significance for Managers and Policymakers

Materials covered in this chapter have several implications for health services managers and policymakers: (1) The health status of a population has tremendous bearing on the utilization of health services, assuming the services are readily available. Planning of health services must be governed by demographic and health trends and initiatives toward reducing disease and disability. (2) The basic meanings of health, determinants of health, and health risk appraisal should be used to design appropriate educational, preventive, and therapeutic initiatives. (3) There is a growing emphasis on evaluating the effectiveness of health care organizations based on the contributions they make to community and population health. The concepts discussed in this chapter can guide administrators in implementing programs of most value to their communities. (4) Quantified measures of health status and utilization can be used by managers and policymakers to evaluate the adequacy and effectiveness of existing programs, plan new strategies, measure progress, and discontinue ineffective services.

Basic Concepts of Health

Health

In the United States, the concepts of health and health care have largely been governed by the medical model, more specifically referred to as the biomedical model. The ***medical model*** defines health as the absence of illness or disease. This definition implies that optimum health exists when a person is free of symptoms and does not require medical treatment. However, it is not a definition of health in the true sense. This prevailing view of health emphasizes clinical diagnosis and medical interventions to treat disease or symptoms of disease, while prevention of disease and health promotion are not included. Therefore, when the term "health care delivery" is used, in reality it refers to medical care delivery.

Medical sociologists have gone a step further in defining health as the state of optimum capacity of an individual to perform his or her expected social roles and tasks, such as work, school, and doing household chores (Parsons 1972). A person who is unable (as opposed to unwilling) to perform his or her social roles in society is considered sick. However, this concept also seems inadequate because many people continue to engage in their social obligations despite suffering from pain, cough, colds, and other types of temporary disabilities, including mental distress. Then, there are those who shirk from their social responsibilities even when they may be in good health. In other words, optimal health is not necessarily reflected in a person's engagement in social roles and responsibilities.

An emphasis on both physical and mental dimensions of health is found in the definition of health proposed by the Society for Academic Emergency Medicine, according to which health is "a state of physical and mental well-being that facilitates the achievement of individual and societal goals" (Ethics Committee, Society for Academic Emergency Medicine 1992). This view of health recognizes the importance of achieving harmony between the physiological and emotional dimensions.

The World Health Organization's (WHO) definition of health is most often cited as the ideal for health care delivery systems; it recognizes that optimal health is more than a mere absence of disease or infirmity. WHO defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO 1948). As a biopsychosocial model, WHO's definition specifically identifies social well-being as a third dimension of health. For example, having a social support network is positively associated with life stresses, self-esteem, and social relations. Conversely, many studies show that social isolation is associated with a higher risk for poor health and mortality (Pantell et al. 2013).

WHO has also defined a health care system as all the activities whose primary purpose is to promote, restore, or maintain health (McKee 2001). As this chapter points out, health care should include much more than medical care. Thus, ***health care*** can be defined as a variety of services believed to improve a person's health and well-being.

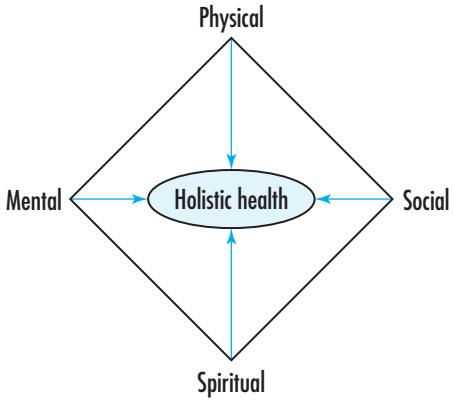
There has been a growing interest in ***holistic health***, which emphasizes the well-being of every aspect of what makes a person whole and complete. Thus, ***holistic medicine*** seeks to treat the individual as a whole person (Ward 1995). For example, diagnosis and treatment should take into

account the mental, emotional, spiritual, nutritional, environmental, and other factors surrounding the origin of disease (Cohen 2003).

Holistic health incorporates the spiritual dimension as a fourth element—in addition to the physical, mental, and social aspects—necessary for optimal health (Figure 2–1). A growing volume of medical literature, both in the United States and abroad, points to the healing effects of a person's religion and spirituality on morbidity and mortality. The importance of spirituality as an aspect of health care is also reflected in a number of policy documents produced by the WHO (2003) and other bodies.

From an extensive review of literature, Chida et al. (2009) concluded that religious practice/spirituality was associated with reductions in death from all causes and death from cardiovascular diseases. Heart patients who attended regular religious services were found to have a significant survival advantage (Oman et al. 2002). Religious and spiritual beliefs and practices have shown a positive impact on a person's physical, mental, and social well-being. Many studies have shown positive relations between religious practice and protective health behaviors (Chida et al. 2009). Several religious communities promote healthy lifestyles associated with tobacco use, alcohol consumption, and diet. An examination of literature found a reduced risk for cancer in these communities (Hoff et al. 2008). Spiritual well-being has also been recognized as an important internal resource for helping people cope with illness. For instance, a study conducted at the University of Michigan found that 93% of the women undergoing cancer treatment indicated that their religious lives helped them sustain their hope (Roberts et al. 1997). Studies have found that a large percentage of patients want their physicians to consider their spiritual needs, and almost half expressed a desire for the physicians to pray with them if they could (see Post et al. 2000).

Figure 2–1 The Four Dimensions of Holistic Health.



The spiritual dimension is frequently tied to one's religious beliefs, values, morals, and practices. Broadly, it is described as meaning, purpose, and fulfillment in life; hope and will to live; faith; and a person's relationship with God (Marwick 1995; Ross 1995; Swanson 1995). A clinically tested scale to measure spiritual well-being included categories such as belief in a power greater than oneself, purpose in life, faith, trust in providence, prayer, meditation, group worship, ability to forgive, and gratitude for life (Hatch et al. 1998).

The Committee on Religion and Psychiatry of the American Psychiatric Association has issued a position statement to emphasize the importance of maintaining respect for a patient's religious/spiritual beliefs. For the first time, "religious or spiritual problem" was included as a

diagnostic category in DSM-5.[1] The holistic approach to health also alludes to the need for incorporating alternative therapies (discussed in Chapter 7) into the predominant medical model.

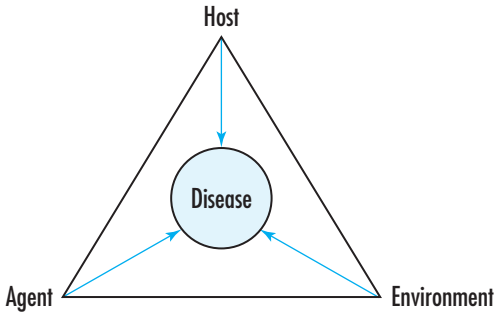
Quality of Life

The term ***quality of life*** is used to capture the essence of overall satisfaction with life during and following a person's encounter with the health care delivery system. Thus, the term is employed in two ways. First, it is an indicator of how satisfied a person is with the experiences while receiving health care. Specific life domains, such as comfort factors, respect, privacy, security, degree of independence, decision-making autonomy, and attention to personal preferences are significant to most people. These factors are now regarded as rights that patients can demand during any type of health care encounter. Second, quality of life can refer to a person's overall satisfaction with life and with self-perceptions of health, particularly after some medical intervention. The implication is that desirable processes during medical treatment and successful outcomes would, subsequently, have a positive effect on an individual's ability to function, carry out social roles and obligations, and have a sense of fulfillment and self-worth.

Risk Factors and Disease

The occurrence of disease involves more than just a single factor. For example, the mere presence of tubercle bacillus does not mean the infected person will develop tuberculosis. Other factors, such as poverty, overcrowding, and malnutrition, may be essential for development of the disease (Friedman 1980). Hence, tracing ***risk factors***—attributes that increase the likelihood of developing a particular disease or negative health condition in the future—requires a broad approach. One useful explanation of disease occurrence (for communicable diseases, in particular) is provided by the tripartite model, sometimes referred to as the Epidemiology[2] Triangle (Figure 2–2). Of the three entities in this model, the ***host*** is the organism—generally, a human—that becomes sick. Factors associated with the host include genetic makeup, level of immunity, fitness, and personal habits and behaviors. However, for the host to become sick, an ***agent*** must be present, although presence of an agent does not ensure that disease will occur. In the previous example, tubercle bacillus is the agent for tuberculosis. Other examples are chemical agents, radiation, tobacco smoke, dietary

Figure 2–2 The Epidemiology Triangle.



[1] *Diagnostic and Statistical Manual of Mental Disorders* is the most widely recognized system of classifying mental disorders.

[2] Epidemiology is the study of the nature, cause, control, and determinants of the frequency and distribution of disease, disability, and death in human populations (Timmreck 1994, 2).

indiscretions, and nutritional deficiencies. The third entity, ***environment***, is external to the host and includes the physical, social, cultural, and economic aspects of the environment. Examples include sanitation, air pollution, anthro-cultural beliefs, social equity, social norms, and economic status. The environmental factors play a moderating role that can either enhance or reduce susceptibility to disease. Because the three entities often interact to produce disease, disease prevention efforts should focus on a broad approach to mitigate or eliminate risk factors associated with all three entities.

Behavioral Risk Factors

Certain individual behaviors and personal lifestyle choices represent important risk factors for illness and disease. For example, smoking has been identified as the leading cause of preventable disease and death in the United States, because it significantly increases the risk of heart disease, stroke, lung cancer, and chronic lung disease (DHHS 2004). Substance abuse, inadequate physical exercise, a high-fat diet, irresponsible use of motor vehicles, and unsafe sex are additional examples of behavioral risk factors. (Table 2–1 presents the percentage of the US population with selected behavioral risks.)

Acute, Subacute, and Chronic Conditions

Disease can be classified as acute, subacute, or chronic. An ***acute condition*** is relatively severe, episodic (of short duration),

Table 2–1 Percentage of US Population with Behavioral Risks

Behavioral Risks	Percentage of Population	Year
Alcohol (12 years and over)	51.8	2010
Marijuana (12 years and over)	6.9	2010
Cocaine use (12th graders)	1.1	2011
Cocaine use (10th graders)	0.7	2011
Cocaine use (8th graders)	0.8	2011
Cigarette smoking (18 years and over)	19.0	2011
Hypertension (20 years and over)	31.9	2009–10
Overweight (20–74 years)	68.5	2007–10
Serum cholesterol (20 years and over)	13.6	2009–10

Note: Data are based on household interviews of a sample of the civilian noninstitutionalized population 12 years of age and over in the coterminous United States.

Source: Data from National Center for Health Statistics. *Health, United States*, 2009. Hyattsville, MD: US Department of Health and Human Services, 2012, pp. 276, 281, 283, 292, 293, 301.

and often treatable and subject to recovery. Treatments are generally provided in a hospital. Examples of acute conditions are a sudden interruption of kidney function or a myocardial infarction (heart attack). A ***subacute condition*** is a less severe phase of an acute illness. It can be a postacute condition, requiring continuity of treatment after discharge from a hospital. Examples include ventilator and head trauma care. A ***chronic condition*** is one that persists over time, is not severe, but is generally irreversible. A chronic condition may be kept under control through appropriate medical treatment, but if left untreated, the condition may lead to severe and life-threatening health problems. Examples of chronic conditions are hypertension, asthma, arthritis, heart disease, and diabetes. Contributors to chronic disease include ethnic, cultural, and behavioral factors and the social and physical environment, discussed later in this chapter.

In the United States, chronic diseases have become the leading cause of death and disability. Almost 50% of Americans have at least one chronic illness (Robert Wood Johnson Foundation 2010), and 8.7 out of every 10 deaths are attributable to chronic disease (WHO 2011). Among both the younger and older age groups (ages 18 and up), hypertension was ranked the most common chronic condition, followed by cholesterol disorders. Among children up to age 17, respiratory diseases and asthma were the most common chronic conditions (Agency for Healthcare Research and Quality 2006). The incidence of childhood chronic diseases has almost quadrupled over the past four decades, mostly due to a threefold increase in childhood obesity (PFCD 2009). Moreover, 26% of adults aged 18 or older had multiple chronic conditions in 2010. The combination of arthritis and hypertension was the most common dyad, and the combination of arthritis, hypertension, and diabetes was the most common triad (Ward and Schiller 2010).

It is estimated that 75% of total health expenditures in the United States are attributable to the treatment of chronic conditions (PFCD 2009). In 2011, total health care costs associated with the treatment of chronic diseases were approximately $1.7 trillion (PFCD 2009). In addition, health disparities continue to be a serious threat to the health and well-being of some population groups. For example, African American, Hispanic, American Indian, and Alaskan Native adults are twice as likely as white adults to have diabetes (CDC 2010a).

There are three main reasons behind the rise of chronic conditions in the US population: (1) New diagnostic methods, medical procedures, and pharmaceuticals have significantly improved the treatment of acute illnesses, survival rates, and longevity, but these achievements have come at the consequence of a larger number of people living with chronic conditions. The prevalence of chronic disease is expected to continue to rise with an aging population and longer life expectancy. (2) Screening and diagnosis have expanded in scope, frequency, and accuracy (Robert Wood Johnson Foundation 2010). (3) Lifestyle choices, such as high-salt and high-fat diets and sedentary lifestyles, are risk factors that contribute to the development of chronic conditions. To address these issues, the DHHS launched a comprehensive initiative with the aid of $650 million allocated under the American Recovery and Reinvestment Act of 2009. The goal of this initiative—Communities

Putting Prevention to Work—is to "reduce risk factors, prevent/delay chronic disease, promote wellness in children and adults, and provide positive, sustainable health change in communities" (DHHS 2010a).

Health Promotion and Disease Prevention

A program of health promotion and disease prevention is built on three main principles: (1) An understanding of risk factors associated with host, agent, and/or environment. Risk factors and their health consequences are evaluated through a process called ***health risk appraisal***. Only when the risk factors and their health consequences are known can interventions be developed to help individuals adopt healthier lifestyles. (2) Interventions for counteracting the key risk factors include two main approaches: (a) behavior modification geared toward the goal of adopting healthier lifestyles and (b) therapeutic interventions. Both are discussed in the next paragraph. (3) Adequate public health and social services, as discussed later in this chapter, include all health-related services designed to minimize risk factors and their negative effects in order to prevent disease, control disease outbreaks, and contain the spread of infectious agents.

Various avenues can be used for motivating individuals to alter behaviors that may contribute to disease, disability, or death. Behavior can be modified through educational programs and incentives directed at specific high-risk populations. In the case of cigarette smoking, for example, health promotion aims at building people's knowledge, attitudes, and skills to avoid or quit smoking. It also involves reducing advertisements and other environmental enticements that promote nicotine addiction. Financial incentives/disincentives, such as a higher cigarette tax, have been used to discourage purchase of cigarettes.

Therapeutic interventions fall into three areas of preventive effort: primary prevention, secondary prevention, and tertiary prevention. ***Primary prevention*** refers to activities undertaken to reduce the probability that a disease will develop in the future (Kane 1988). Its objective is to restrain the development of a disease or negative health condition before it occurs. Therapeutic intervention would include community health efforts to assist patients in smoking cessation and exercise programs to prevent conditions such as lung cancer and heart disease. Safety training and practices at the workplace can reduce serious work-related injuries. Prenatal care is known to lower infant mortality rates. Immunization has had a greater impact on prevention against childhood diseases and mortality reduction than any other public health intervention besides clean water (Plotkin and Plotkin 1999). Hand washing, refrigeration of foods, garbage collection, sewage treatment, and protection of the water supply are also examples of primary prevention (Timmreck 1994). There have been numerous incidents where emphasis on food safety and proper cooking could have prevented outbreaks of potentially deadly episodes, such as those caused by *E. coli.*

Secondary prevention refers to early detection and treatment of disease. Health screenings and periodic health examinations are just two examples. Screening for hypertension, cancers, and diabetes, for example, have been instrumental in prescribing early treatment. The main objective of secondary

prevention is to block the progression of a disease or an injury from developing into an impairment or disability (Timmreck 1994).

Tertiary prevention refers to interventions that could prevent complications from chronic conditions and prevent further illness, injury, or disability. For example, regular turning of bed-bound patients prevents pressure sores; rehabilitation therapies can prevent permanent disability; and infection control practices in hospitals and nursing homes are designed to prevent ***iatrogenic illnesses***, that is, illnesses or injuries caused by the process of health care.

As shown in Table 2–2, prevention, early detection, and treatment efforts helped reduce cancer mortality quite significantly between 1991 and 2010. This decrease was the first sustained decline since record keeping was instituted in the 1930s.

Disease Prevention Under Health Care Reform

Prevention and wellness have received a great deal of emphasis in the health reform law. The ACA requires Medicare and private health insurance plans to provide a range of preventive services with no out-of-pocket costs (see Chapter 6). As a result, in 2011 and 2012, an estimated 71 million Americans with private insurance gained access to preventive services (DHHS 2013).

The ACA established the Prevention and Public Health Fund (PPHF) which has distributed almost $3.2 billion toward national preventive efforts and toward improving health outcomes and enhancing quality of health care (American Public Health Association 2013). Grants have been issued to reduce chronic diseases. The Office of the Surgeon General has developed a National Prevention Strategy that encourages partnerships among federal, state, tribal, local, and territorial governments; business, industry, and other private sector partners; philanthropic organizations; community and faith-based organizations; and everyday Americans to improve health through prevention (National Prevention Council 2011). The Centers for Disease Control and Prevention

Table 2–2 Annual Percent Decline in US Cancer Mortality 1991–2010

Type of Cancer	1991–1995	1994–2003	1998–2007	2001–2010
All cancers	3.0	1.1	1.4	1.5
Breast cancer	6.3	2.5	2.2	2.2
Cervical cancer	9.7	3.6	2.6	1.5
Ovarian cancer	4.8	0.5	0.8	2.0
Prostate cancer	6.3	3.5	3.1	2.7

Source: Data from National Center for Health Statistics of the Centers for Disease Control and Prevention, National Cancer Institute, SEER Cancer Statistics Review, 1975–2010.

(CDC) established a National Diabetes Prevention Program. In 2012, six organizations received $6.75 million to develop partnerships that reach a large numbers of individuals with pre-diabetes (CDC 2013a, 2013b).

In 2011, $10 million was made available to establish and evaluate comprehensive workplace wellness programs (DHHS 2011b). Beginning in 2014, $200 million in wellness grant funding will be available to small businesses to encourage the formation of wellness programs and employee incentivizing (Anderko et al. 2012).

Public Health

Public health remains poorly understood by its prime beneficiaries, the public. For some people, public health evokes images of a massive social enterprise or welfare system. To others, the term means health care services for everyone. Still another image of public health is that of a body of knowledge and techniques that can be applied to health-related problems (Turnock 1997). However, none of these ideas adequately reflects what public health is.

The Institute of Medicine (IOM) proposed that the mission of public health is to fulfill "society's interest in assuring conditions in which people can be healthy" (IOM 1988). ***Public health*** deals with broad societal concerns about ensuring conditions that promote optimum health for the society as a whole. It involves the application of scientific knowledge to counteract any threats that may jeopardize health and safety of the general population. Because of its extensive scope, the vast majority of public health efforts are carried out by government agencies, such as the CDC in the United States.

Three main distinctions can be seen between the practices of medicine and public health: (1) Medicine focuses on the individual patient—diagnosing symptoms, treating and preventing disease, relieving pain and suffering, and maintaining or restoring normal function. Public health, conversely, focuses on populations (Shi and Johnson 2014). (2) The emphases in modern medicine are on the biological causes of disease and developing treatments and therapies. Public health focuses on (a) identifying the environmental, social, and behavioral risk factors as well as emerging or potential risks that may threaten people's health and safety, and (b) implementing population-wide interventions to minimize those risk factors (Peters et al. 2001). (3) Medicine focuses on the treatment of disease and recovery of health. Public health deals with various efforts to prevent disease and counteract threats that may negatively affect people's health.

Public health activities can range from providing education on nutrition to passing laws that enhance automobile safety. For example, public health includes dissemination to the public and to health professionals timely information about important health issues, particularly when communicable diseases pose potential threats to large segments of a population.

Compared to the delivery of medical services, public health involves a broader range of professionals. The medical sector encompasses physicians, nurses, dentists, therapists, social workers, psychologists, nutritionists, health educators, pharmacists, laboratory technicians, health services administrators, and so forth. In addition

to these professionals, public health also involves professionals such as sanitarians, epidemiologists, statisticians, industrial hygienists, environmental health specialists, food and drug inspectors, toxicologists, and economists (Lasker 1997).

Health Protection and Environmental Health

Health protection is one of the main public health functions. In the 1850s, John Snow successfully traced the risk of cholera outbreaks in London to the Broad Street water pump (Rosen 1993). Since then, ***environmental health*** has specifically dealt with preventing the spread of disease through water, air, and food (Schneider 2000). Environmental health science, along with other public health measures, was instrumental in reducing the risk of infectious diseases during the 1900s. For example, in 1900, pneumonia, tuberculosis, and diarrhea, along with enteritis, were the top three killers in the United States (CDC 1999); that is no longer the case today (see Table 2–3). With the rapid industrialization during the 20th century, environmental health faced new challenges due to serious health hazards from chemicals, industrial waste, infectious waste, radiation, asbestos, and other toxic substances. In the 21st century, chemical, biological, and nuclear agents in the hands of terrorists and rogue nations has emerged as a new environmental threat.

Table 2–3 Leading Causes of Death, 2010

Cause of Death	Deaths	Percentage
All causes	2,468,435	100.0
Diseases of the heart	597,689	24.2
Malignant neoplasms	574,743	23.3
Chronic lower respiratory diseases	138,080	5.6
Cerebrovascular diseases	129,476	5.2
Unintentional injuries	120,859	4.9
Alzheimer's disease	83,494	3.4
Diabetes mellitus	69,071	2.8
Nephritis, nephrotic syndrome, and nephrosis	50,476	2.0
Influenza and pneumonia	50,097	2.0
Suicide	38,364	1.6

Source: Data from National Center for Health Statistics. *Health, United States, 2012*. Hyattsville, MD: Department of Health and Human Services, 2013, p. 88.

Health Protection During Global Pandemics

Over time, public health has become a complex global undertaking. Its main goal of protecting the health and safety of populations from a variety of old and new threats cannot be achieved without global cooperation (see Chapter 14). In 2003, severe acute respiratory syndrome (SARS)—a contagious disease that is accompanied by fever and symptoms of pneumonia or other respiratory illness—spread from China to Canada. Worldwide over 8,000 people were affected (CDC 2012).

The global threat of avian influenza has also elicited a public health response. The CDC launched a website dedicated to educating the public about avian influenza, how it is spread, and past and current outbreaks. The website contains specific information for health professionals, travelers, the poultry industry, state departments of health, and people with possible exposures to avian influenza (CDC 2007).

After a novel H1N1 influenza virus emerged from Mexico in April 2009, US health officials anticipated and prepared for an influenza pandemic, and it stretched the response capabilities of the public health system. The virus affected every US state, and Americans were left unprotected because of the unavailability of antiviral medications. Since then, a global effort has been undertaken to establish collaborative networks to exchange information and contain global pandemics (WHO 2013).

Health Protection and Preparedness in the United States

Since the horrific events of what is commonly referred to as 9/11 (September 11, 2001), America has opened a new chapter in health protection. The efforts to protect the health and safety of Americans began in June 2002 when President Bush signed into law the Public Health Security and Bioterrorism Preparedness Response Act of 2002. Subsequently, the Homeland Security Act of 2002 created the Department of Homeland Security (DHS) and called for a major restructuring of the nation's resources with the primary mission of helping prevent, protect against, and respond to any acts of terrorism in the United States. It also provided better tools to contain attacks on the food and water supplies; protect the nation's vital infrastructures, such as nuclear facilities; and track biological materials anywhere in the United States. The term ***bioterrorism*** encompasses the use of chemical, biological, and nuclear agents to cause harm to relatively large civilian populations.

Now, health protection and preparedness involves a massive operation to deal with any natural or man-made threats. Dealing with such threats requires large-scale preparations, which include appropriate tools and training for workers in medical care, public health, emergency care, and civil defense agencies at the federal, state, and local levels. It requires national initiatives to develop countermeasures, such as new vaccines, a robust public health infrastructure, and coordination among numerous agencies. It requires an infrastructure to handle large numbers of casualties and isolation facilities for contagious patients. Hospitals, public health agencies, and civil defense must be linked together through information systems. Containment of infectious agents, such as smallpox, necessitates quick detection, treatment, isolation, and organized efforts to protect the unaffected population. Rapid cleanup, evacuation of

the affected population, and transfer of victims to medical care facilities require detailed plans and logistics.

The United States has confronted major natural disasters, such as hurricane Katrina in 2005, hurricane Sandy in 2012, and tornadoes in Oklahoma in 2013, as well as man-made mass casualties such as the Boston Marathon Bombing on April 15, 2013. Health protection and preparedness have become ongoing efforts through revitalized initiatives such as the Pandemic and All-Hazards Preparedness Act (PAHPA) of 2006 which also authorized a new Assistant Secretary for Preparedness and Response (ASPR) within the DHHS and called for the establishment of a quadrennial National Health Security Strategy (NHSS). The CDC has developed the National Biosurveillance Strategy for Human Health which covers six priority areas: electronic health information exchange, electronic laboratory information exchange, unstructured data, integrated biosurveillance information, global disease detection and collaboration, and biosurveillance workforce. Based on the National Health Security Strategy developed by the DHHS in 2009, *Healthy People 2020* focused on four areas of reinforcement under an overarching goal to "improve the Nation's ability to prevent, prepare for, respond to, and recover from a major health incident": time to release official information about a public health emergency, time for designated personnel to respond to an emergency, Laboratory Response Network (LRN) laboratories, and time to develop after-action reports and improvement plans in states (DHHS 2010b). A progress report shows that most states and localities have strong biological laboratory capabilities and capacities, with nearly 90% of laboratories in the LRN reachable around the clock (CDC 2010b).

In 2011, the Health Alert Network (HAN) was established, which is a nationwide program designed to facilitate communication, information, and distance learning related to health threats, including bioterrorism (DHHS 2011a). When fully established, the network will link together the various local health departments as well as other components of bioterrorism preparedness and response, such as laboratories and state health departments.

One of the key concepts of preparedness is ***surge capacity***, defined as "the ability of a healthcare facility or system to expand its operations to safely treat an abnormally large influx of patients" (Bonnett and Peery 2007). The initial response is conducted at a local health care facility, such as a hospital. Strategies for expanding the surge capacity of a hospital include early discharge of stable patients, cancellation of elective procedures and admissions, conversion of private rooms to double rooms, reopening of closed areas, revision of staff work hours to a 12-hour disaster shift, callback of off-duty personnel, and establishment of temporary external shelters for patient holding (Hick et al. 2004).

If the local level response becomes overloaded or incapacitated, it requires activation of a second tier of disaster response—community-level surge capacity. Cooperative regional planning necessitates sharing of staff and supplies across a network of regional healthcare facilities (Hick et al. 2004). An important aspect of disaster planning at the community level focuses on the transportation logistics of the region. The quantity of ambulances in the area and the means of accessing these resources during an event could be crucial to delivering proper care to critical patients (Kearns et al. 2013). The final tier of disaster response

involves federal aid under the National Disaster Medical System (NDMS), which actually dates back to the 1980s and was designed to accommodate large numbers of military casualties. Disaster Medical Assistance Teams (DMATs) are a vital component of the NDMS that directly respond to the needs of an overwhelmed community. DMATs deploy with trained personnel (in both medical and ancillary services), equipped with tents, water filtration, generators, and medical supplies (Stopford 2005).

Despite the progress made, disaster preparedness efforts in the United States remain fragmented and underfunded. For example, review, rotation, replacement, and upgrade of equipment and supplies in the system on a regular basis have remained a challenge (Cohen and Mulvaney 2005).

Determinants of Health

Health determinants are major factors that, over time, affect the health and well-being of individuals and populations. An understanding of health determinants is necessary for any positive interventions necessary to improve health and longevity.

Blum's Model of Health Determinants

In 1974, Blum (1981) proposed an "Environment of Health" model, later called the "Force Field and Well-Being Paradigms of Health" (Figure 2–3). Blum proposed four major inputs that contributed to health and well-being. These main influences (called "force fields") are environment, lifestyle, heredity, and medical care, all of which must be considered simultaneously when addressing the health status of an individual or a population. In other words, there is no single pathway to better health, because health determinants interact in complex ways. Consequently, improvement in health requires a multipronged approach.

The four wedges in Figure 2–3 represent the four major force fields. The size of each wedge signifies its relative importance. Thus, the most important force field is environment, followed by lifestyles and heredity. Medical care has the least impact on health and well-being.

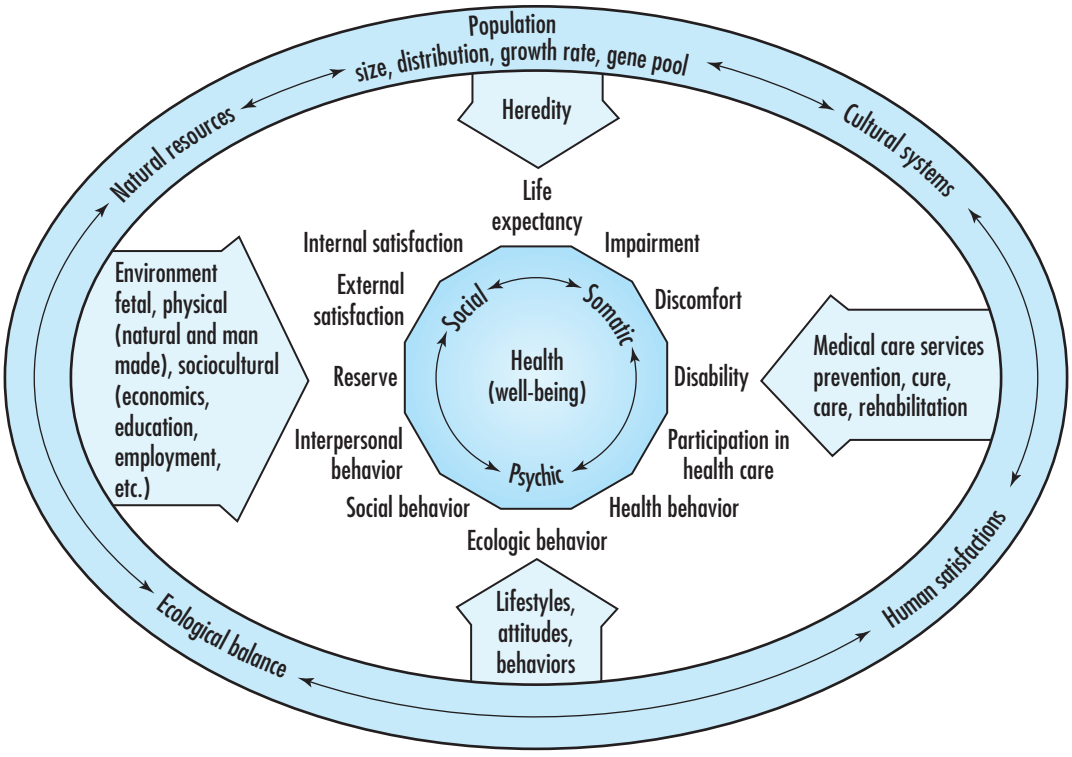
Blum's model also explains that the four main forces operate within a much broader context, and are affected by broad national and international factors, such as a nation's population characteristics, natural resources, ecological balance, human satisfactions, and cultural systems. Among these factors, type of health care delivery system can also be included. In the United States, the preponderance of health care expenditures is devoted to the treatment of medical conditions rather than to the prevention and control of factors that produce those medical conditions in the first place. This misdirection can be traced to the conflicts that often result from the beliefs and values ingrained in the American culture.

Environment

Environmental factors encompass the physical, socioeconomic, sociopolitical, and sociocultural dimensions. Among physical environmental factors are air pollution, food and water contaminants, radiation, toxic chemicals, wastes, disease vectors, safety hazards, and habitat alterations.

The relationship of socioeconomic status (SES) to health and well-being may be explained by the general likelihood that people who have better education also have

Figure 2–3 The Force Field and Well-Being Paradigms of Health.



Source: Reproduced from H.L. Blum, *Planning for Health,* © 1981, Human Sciences Press, with kind permission from Springer Science+Business Media B.V.

higher incomes. The greater the economic gap between the rich and the poor in a given geographic area, the worse the health status of the population in that area is likely to be. It has been suggested that wide income gaps produce less social cohesion, greater psychosocial stress, and, consequently, poorer health (Wilkinson 1997). For example, social cohesion—characterized by a hospitable social environment in which people trust each other and participate in communal activities—is linked to lower overall mortality and better self-rated health (Kawachi et al. 1997, 1999). Even countries with national health insurance programs, such as Britain, Australia, Denmark, and Sweden, experience persistent and widening disparities in health according to socioeconomic status (Pincus et al. 1998). The joint relationship of income inequality and availability of primary care has also been found to be significantly associated with individuals' self-rated health status (Shi et al. 2002).

Lifestyle

Lifestyle, or behavioral risk factors, were previously discussed. This section provides some illustrations of how lifestyle factors are related to health. Studies have shown that diet and foods, for example,

play a major role in most of the significant health problems of today. Heart disease, diabetes, stroke, and cancer are but some of the diseases with direct links to dietary choices. Throughout the world, incidence and mortality rates for many forms of cancer are rising. Yet research has clearly indicated that a significant portion of cancer is preventable. Researchers estimated that 40% to 60% of all cancers, and as many as 35% of cancer deaths, are linked to diet (American Institute for Cancer Research 1996). Current research also shows that a diet rich in fruits, vegetables, and low-fat dairy foods, and with reduced saturated and total fat, can substantially lower blood pressure (see, for example, the DASH Eating Plan recommended by DHHS 2006). The role of exercise and physical activity as a potentially useful, effective, and acceptable method is significant in reducing the risk of colon cancer (Macfarlane and Lowenfels 1994) as well as many other health problems.

Heredity

Genetic factors predispose individuals to certain diseases. For example, cancer occurs when the body's healthy genes lose their ability to suppress malignant growth or when other genetic processes stop working properly, although this does not mean that cancer is entirely a disease of the genes (Davis and Webster 2002). A person can do little about the genetic makeup he or she has inherited. However, lifestyles and behaviors that a person may currently engage in can have significant influences on future progeny. Advances in gene therapy hold the promise of treating a variety of inherited or acquired diseases.

Medical Care

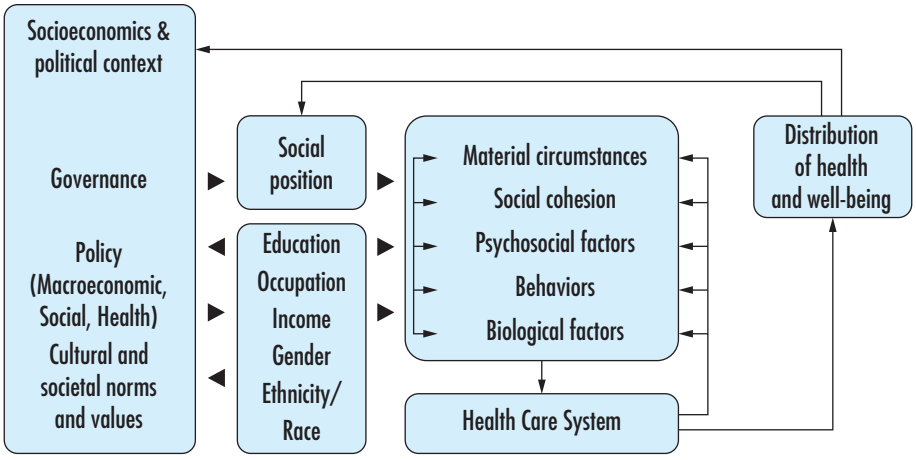
Even though the other three factors are more important in the determination of health, medical care is, nevertheless, a key determinant of health. Both individual and population health are closely related to having access to adequate preventive and curative health care services. Despite the fact that medical care, compared to the other three factors, has the least impact on health and well-being, Americans' attitudes toward health improvement focus on more medical research, development of new medical technology, and spending more on high-tech medical care. Yet, significant declines in mortality rates were achieved well before the modernization of Western medicine and the escalation in medical care expenditures.

The availability of primary care may be one alternative pathway through which income inequality influences population-level health outcomes. Research by Shi and colleagues (1999, 2001) suggests that access to primary care, in addition to income inequality, significantly correlates with reduced mortality, increased life expectancy, and improved birth outcomes. In the United States, individuals living in states with a higher primary care physician-to-population ratio are more likely to report good health than those living in states with a lower ratio (Shi et al. 2002).

Contemporary Models of Health Determinants

More recent models have built upon Blum's framework of health determinants. For example, the model proposed by Dahlgren and Whitehead (2006) states that age, sex, and genetic makeup are fixed factors, but other factors in the surrounding layers can be

Figure 2–4 WHO Commission on Social Determinants of Health Conceptual Framework.



Source: Centers for Disease Control and Prevention. 2010. *Establishing a Holistic Framework to Reduce Inequities in HIV, Viral Hepatitis, STDs, and Tuberculosis in the United States.*

modified to positively influence population health. Individual lifestyle factors have the potential to promote or damage health, and social interactions can sustain people's health; but living and working conditions; food supplies; access to essential goods and services; and the overall economic, cultural, and environmental conditions have wider influences on individual and population health.

Ansari and colleagues (2003) proposed a public health model of the social determinants of health in which the determinants are categorized into four major groups: social determinants, health care system attributes, disease-inducing behaviors, and health outcomes.

The WHO Commission on Social Determinants of Health (2007) concluded that "the social conditions in which people are born, live, and work are the single most important determinant of one's health status." The WHO model provides a conceptual framework for understanding the socioeconomic and political contexts, structural determinants, intermediary determinants (including material circumstances, social-environmental circumstances, behavioral and biological factors, social cohesion, and the health care system), and the impact on health equity and well-being measured as health outcomes.

US government agencies, such as the CDC and DHHS, have recognized the need to address health inequities. CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention adopted the WHO framework on social determinants of health to use as a guide for its activities (see Figure 2–4).

Measures Related to Health

Certain quantitative measures commonly apply to health, health status, and the utilization of health care. The conceptual approaches for defining health and its

distribution help form a vision for the future, and objective measures play a critical role in evaluating the success of various programs, as well as for directing future planning activities. Practical approaches for measuring health are, however, quite limited, and mental health is more difficult to quantify and measure than physical health. An objective evaluation of social and spiritual health is even more obscure.

The concept of population, as it applies to population health, has been borrowed from the disciplines of statistics and epidemiology. The term "population" is not restricted to describing the total population. Although commonly used in that way, the term may also apply to a defined subpopulation, for example, age groups, marital categories, income levels, occupation categories, racial/ethnic groups, people having a common disease, people in a certain risk category, or people in a certain community or geographic region of a country. The main advantage of studying subpopulations is that it helps trace the existence of health problems to a defined group. Doing so avoids concealing serious problems in a minority group within the favorable statistics of the majority. By pinpointing health problems in certain well defined groups, targeted interventions and new policy initiatives can be deployed in the most effective manner.

Measures of Physical Health

Physical health status is often interpreted through ***morbidity*** (disease and disability) and ***mortality*** (death) rates. In addition, self-perceived health status is a commonly used indicator of health and well-being. Respondents are asked to rate their health as excellent, very good, good, fair, or poor. Self-perceived health status is highly correlated with many objective measures of health status. It is also a good predictor of patient-initiated physician visits, including general medical and mental health visits.

Longevity

Life expectancy—a prediction of how long a person will live—is widely used as a basic measure of health status. The two common measures are life expectancy at birth (Table 2–4)—or how long a newborn can expect to live—and life expectancy at age 65—expected remaining years of life for someone at age 65. These measures are actuarially determined and published by government agencies such as the National Center for Health Statistics (NCHS). The US Census Bureau (1995) projected that life expectancy in the United States will increase

Table 2–4 US Life Expectancy at Birth—1999, 2003, and 2010

Year	Total	Male	Female
1999	76.7	73.9	79.4
White	77.3	74.6	79.9
Black	71.4	67.8	74.7
2003	77.5	74.8	80.1
White	78.0	75.3	80.5
Black	72.7	69.0	76.1
2010	78.8	76.4	81.1
White	81.2	78.5	83.8
Black	74.7	71.4	77.7

Sources: Data from National Center for Health Statistics, *Health, United States, 1996–1997 and Injury Chartbook*. Hyattsville, MD: 1997, p. 108; *Health, United States, 2002*, p. 116; *Health, United States, 2006*, p. 176; and *Health, United States, 2012*, p. 77.

from 76.0 years in 1993 to 82.6 years in 2050.

Morbidity

The measurement of morbidity or disease, such as cancer or heart disease, is expressed as a ratio or proportion of those who have the problem and the ***population at risk***. The population at risk includes all the people in the same community or population group who could acquire a disease or condition (Smith 1979). Incidence and prevalence are two widely used indicators for the number of ***cases***, that is, people who end up acquiring a negative health condition. ***Incidence*** counts the number of new cases occurring in the population at risk within a certain period of time, such as a month or a year (Smith 1979; see Formula 2–1). Incidence describes the extent to which, in a given population, people acquire a given disease during a specified time period. Incidence is particularly useful in estimating the magnitude of conditions of relatively short duration. Declining levels of incidence point to success of health promotion and disease prevention efforts, because they prevent new cases (Ibrahim 1985). High levels of incidence may suggest an impending ***epidemic***, that is, a large number of people who get a specific disease from a common source. The second measure of morbidity, ***prevalence***, determines the total number of cases at a specific point in time, in a defined population (see Formula 2–2). Prevalence is useful in quantifying the magnitude of illnesses of a relatively long duration. Decreased prevalence indicates success of treatment programs by shortening the duration of illness (Ibrahim 1985). Both incidence and prevalence rates can apply to disease, disability, or death.

Formula 2–1

Incidence = Number of new cases during a specified period/Population at risk

Formula 2–2

Prevalence = Total number of cases at a specific point in time/Specified population

The calculation of rates often requires dividing a small number by a large number representing a defined population. The result is a fraction. To make the fractions meaningful and interpretable, they are multiplied by 100 (to get a percentage), 1,000 (to get a rate per 1,000 people), 10,000 (to get a rate per 10,000 people), or a higher multiple of 10.

Disability

Disease and injury can lead to temporary or permanent, as well as partial or total, disability. Although the idea of morbidity includes disabilities, as well as disease, there are specific measures of disability. Some common measures are the number of days of bed confinement, days missed from work or school, and days of restricted activity. All measures are in reference to a specific time period, such as a year.

One of the most widely used measures of physical disability among the elderly, in particular, is the ***activities of daily living*** (ADL) scale. The ADL scale is appropriate for evaluating disability in both community-dwelling and institutionalized adults. The classic ADL scale, developed by Katz and Akpom (1979), includes six basic activities: eating, bathing, dressing, using the toilet, maintaining continence, and transferring from bed to chair. To evaluate disability in community-dwelling adults, a modified Katz scale is commonly used. It consists of seven items (Ostir et al. 1999).

Five of these items—feeding, bathing, dressing, using the toilet, and transferring from bed to chair—have been retained from the original Katz scale. The additional two items are grooming and walking a distance of 8 feet. Thus, it includes items measuring self-care and mobility. The ADLs identify personal care functions with which a disabled person may need assistance. Depending on the extent of disability, personal care needs can be met through adaptive devices; care rendered by another individual, such as a family member; or care in a nursing facility.

Another commonly used measure of physical function is the ***instrumental activities of daily living*** (IADL) scale. This scale measures activities that are necessary for living independently in the community, such as using the telephone, driving a car or traveling alone on a bus or by taxi, shopping, preparing meals, doing light housework, taking medicines, handling money, doing heavy housework, walking up and down stairs, and walking a half-mile without help. IADLs typically require higher cognitive functioning than ADLs and, as such, are not purely physical tests of functional disability. The IADL scale measures the level of functioning in activities that are important for self-sufficiency, such as the ability to live independently.

Mortality

Death rates are computed in different forms as indicators of population health. ***Crude rates*** refer to the total population; they are not specific to any age group or disease category (Formula 2–3).

Formula 2–3

Crude death rate = Total deaths (usually in 1 year)/Total population

Specific rates are useful because death rates vary greatly by race, sex, age, and type of disease or condition. Specific rates allow health care professionals to target programs at the appropriate population subgroups (Dever 1984). Examples of specific rates are age-specific mortality rate (Formula 2–4) and cause-specific mortality rate (Formula 2–5). The age-specific mortality rate provides a measure of the risk (or probability) of dying when a person is in a certain age group. The cause-specific mortality rate provides a measure of the risk (or probability) of dying from a specific cause.

Formula 2–4

Age-specific mortality rate = Number of deaths within a certain age group/Total number of persons in that age group

Formula 2–5

Cause-specific mortality rate = Number of deaths from a specific disease/Total population

Infant mortality rate (actually a ratio; Formula 2–6) is an indicator that reflects the health status of the mother and the child through pregnancy and the birth process. It also reflects the level of prenatal and postnatal care (Timmreck 1994).

Formula 2–6

Infant mortality rate = Number of deaths from birth to 1 year of age (in 1 year)/Number of live births during the same year

Demographic Change

In addition to measures of disease and mortality, changes in the composition of a population over time are important in planning health services. Population change involves

three components: births, deaths, and migration (Dever 1984). For example, the migration of the elderly to the southern states requires planning of adequate retirement and long-term care services in those states. Longevity is also an important factor that determines demographic change. For example, lower death rates, lower birth rates, and greater longevity, together, indicate an aging population. The next section presents measures of births and migration, whereas measures of death were previously discussed.

Births

Natality and fertility are two measures associated with births. ***Natality***, or birth rate, is useful in assessing the influence of births on demographic change and is measured by the crude birth rate (Formula 2–7).

Formula 2–7

Crude birth rate = Number of live births (usually in 1 year)/Total population

Fertility refers to the capacity of a population to reproduce (Formula 2–8). Fertility is a more precise measure than natality, because fertility relates actual births to the sector of the population capable of giving birth.

Formula 2–8

Fertility rate = Number of live births (usually in 1 year)/Number of females aged 15–44

Migration

Migration refers to the geographic movement of populations between defined geographic units and involves a permanent change of residence. The net migration rate (Formula 2–9) defines the change in the population as a result of ***immigration*** (in migration) and ***emigration*** (out migration) (Dever 1984, p. 249). The rate is calculated for a specified period, such as 1 year, 2 years, 5 years, and so on.

Formula 2–9

Net migration rate = (Number of immigrants – Number of emigrants)/Total population (during a specific period of time)

Measures of Mental Health

Measurement of mental health is less objective than measurement of mortality and morbidity, because mental health often encompasses feelings that cannot be observed. Physical functioning, by contrast, reflected in behaviors and performances, can be more readily observed. Hence, measurement of mental health more appropriately refers to assessment rather than measurement. Mental health can be assessed by the presence of certain symptoms, including both psychophysiologic and psychological symptoms. Examples of psychophysiologic symptoms are low energy, headache, and upset stomach. Examples of psychological symptoms are nervousness, depression, and anxiety.

Self-assessment of one's own psychological state may also be used for mental health assessment. Self-assessment can be obtained through self-reports of frequency and intensity of psychological distress, anxiety, depression, and psychological well-being.

Measures of Social Health

Measures of social health extend beyond the individual to encompass the extent of social contacts across various facets of life, such as

family life, work life, and community life. Breslow (1972) attempted to measure social health along four dimensions: (1) employability, based on educational achievement, occupational status, and job experience; (2) marital satisfaction; (3) sociability, determined by the number of close friends and relatives; and (4) community involvement, which encompassed attendance at religious services, political activity, and organizational membership.

Social health status is sometimes evaluated in terms of social contacts and social resources. ***Social contacts*** are evaluated in terms of the number of social contacts or social activities a person engages in within a specified period. Examples are visits with friends and relatives, as well as attendance at social events, such as conferences, picnics, or other outings. ***Social resources*** refer to social contacts that can be relied on for support, such as relatives, friends, neighbors, and members of a religious congregation. Social contacts can be observed, and they represent the more objective of the two categories; however, one criticism of social contact measures is their focus on events and activities themselves, with little consideration of how the events are personally experienced. Unlike social contacts, social resources cannot be directly observed and are best measured by asking the individuals direct questions. Evaluative questions include whether these individuals can rely on their social contacts to provide tangible support and needed companionship and whether they feel cared for, loved, and wanted.

Measures of Spiritual Health

Within a person's individual, social, and cultural context, spiritual well-being can have a large variety of connotations. Such variations make it extremely difficult to propose standardized approaches for measuring the spiritual dimension. Attempts to measure this dimension are illustrated in the General Social Survey, which includes people's self-perceptions about happiness; religious experiences; and their degree of involvement in activities, such as prayer and attending religious services. A wide range of tools for spiritual assessment are now available. Generic methods of spiritual assessment are not associated with any particular religion or practice, and hence do not require a detailed understanding of any particular religious tradition (Draper 2012). An example of a generic scale is one developed by Vella-Brodrick and Allen (1995) which evaluates items such as reaching out for spiritual intervention; engaging in meditation, yoga, or prayer; duration of meditation or prayer for inner peace; frequency of meditation or prayer; reading about one's religious beliefs; and discussions or readings about ethical and moral issues. Several quantitative measurement scales are also available to assess dimensions such as general spirituality, spiritual well-being, spiritual needs, and spiritual coping (Monod et al. 2011), but their use has been confined mainly to clinical research.

Measures of Health Services Utilization

Utilization refers to the consumption of health care services and the extent to which health care services are used. Measures of utilization can be used to determine which individuals in a population group receive certain types of medical services, which do not receive services, and why. A health care provider, such as a hospital, can find out the extent to which its services are used. Measures of utilization can help managers decide whether certain services should be

added or eliminated, and health planners can determine whether programs have been effective in reaching their targeted populations. Measures of utilization, therefore, play a critical role in the planning of health care delivery capacity, for example, how many hospital beds are required to meet the acute care needs of a given population (Pasley et al. 1995). Measures of utilization are too numerous to be covered here, but some selected common measures are provided (Formulas 2–10 to 2–16).

Crude Measures of Utilization

Formula 2–10

Access to primary care services = Number of persons in a given population who visited a primary care provider in a given year/Size of the population

(This measure is generally expressed as a percentage, i.e., the fraction is multiplied by 100.)

Formula 2–11

Utilization of primary care services = Number of primary care visits by people in a given population in a given year/Size of the population

(This measure is generally expressed as number of visits per person per year.)

Specific Measures of Utilization

Formula 2–12

Utilization of targeted services = Number of people in a specific targeted population using special services (or visits)/Size of the targeted population group

(The fraction obtained is multiplied by 100, 1000, or a higher multiple of 10 to facilitate interpretation of the result.)

Formula 2–13

Utilization of specific inpatient services = Number of inpatient days/Size of the population

(The fraction obtained is multiplied by 100, 1000, or a higher multiple of 10 to facilitate interpretation of the result.)

Measures of Institution-Specific Utilization

Formula 2–14

Average daily census = Total number of inpatient days in a given time period/Number of days in the same time period

Formula 2–15

Occupancy rate = Total number of inpatient days in a given time period/Total number of available beds during the same time period

or

Average daily census/Total number of beds in the facility

(This measure is expressed as a percentage, i.e., the fraction is multiplied by 100.)

Formula 2–16

Average length of stay = Total number of inpatient days during a given time period/Total number of patients served during the same time period

Measures of Global Health

Global monitoring of changes in the health of various populations requires the use of "tried and true" global health indicators. Global health indicators can be divided into those that directly measure health phenomena (e.g., diseases, deaths, use of services) and indirect measures (e.g., social development, education and poverty indicators); these are also referred to as proximal and distal indicators, respectively. On the basis of population statistics describing levels of education attained and access to safe water and sanitation, it is possible to categorize a

country fairly accurately as having a population with high, medium, or low burden of disease (Larson and Mercer 2004).

Anthro-Cultural Beliefs and Values

A value system orients the members of a society toward defining what is desirable for that society. It has been observed that even a society as complex and highly differentiated as in the United States can be said to have a relatively well integrated system of institutionalized common values at the societal level (Parsons 1972). Although such a view may still prevail, American society now has several different subcultures that have grown in size due to a steady influx of immigrants from different parts of the world.

The current system of health services delivery traces its roots to the traditional beliefs and values espoused by the American people. The value and belief system governs the training and general orientation of health care providers, type of health delivery settings, financing and allocation of resources, and access to health care.

Some of the main beliefs and values prevalent in the American culture are outlined as follows:

1. A strong belief in the advancement of science and the application of scientific methods to medicine were instrumental in creating the medical model that primarily governs health care delivery in the United States. In turn, the medical model has fueled the tremendous growth in medical science and technological innovation. As a result, the United States has been leading the world in medical breakthroughs. These developments have had numerous implications for health services delivery:
   a. They increase the demand for the latest treatments and raise patients' expectations for finding cures.
   b. Medical professionals have been preoccupied with clinical interventions, whereas the holistic aspects of health and use of alternative therapies have not received adequate emphasis.
   c. Health care professionals have been trained to focus on physical symptoms rather than the underlying causes of disease.
   d. Integration of diagnosis and treatment with disease prevention has been lagging behind.
   e. Most research efforts have focused on the development of medical technology. Commitment of resources to the preservation and enhancement of health and well-being has lagged behind.
   f. Medical specialists, using the latest technology, are held in higher esteem and earn higher incomes than general practitioners.
   g. The desirability of health care delivery institutions, such as hospitals, is often evaluated by their acquisition of advanced technology.
   h. Whereas biomedicine has taken central stage, diagnosis and treatment of mental health have been relegated to a lesser status.
   i. The biomedical model has neglected the social and spiritual elements of health.

2. America has been a champion of capitalism. Due to a strong belief in capitalism, health care has largely been viewed as an economic good (or service), not as a public resource.
3. A culture of capitalism promotes entrepreneurial spirit and self-determination. Hence, individual capabilities to obtain health services have largely determined the production and consumption of health care—which services will be produced, where and in what quantity, and who will have access to those services. Some key implications are:
   a. Upper-tier access to health care services is available mainly through private health insurance. Those with public insurance fall in a second tier. The uninsured make up a third tier.
   b. A clear distinction exists between the types of services for poor and affluent communities and between those in rural and inner-city locations.
   c. The culture of individualism emphasizes individual health rather than population health. Medical practice, therefore, has been directed at keeping the individual healthy rather than keeping the entire community healthy.
   d. A concern for the most underprivileged classes in society—the poor, the elderly, the disabled, and children—led to the creation of the public programs Medicaid, Medicare, and the Children's Health Insurance Program (CHIP).
4. Principles of free enterprise and a general distrust of big government have kept the delivery of health care largely in private hands. Hence, a separation also exists between public health functions and the private practice of medicine.

Equitable Distribution of Health Care

Scarcity of economic resources is a central economic concept. From this perspective, health care can be viewed as an economic good. Two fundamental questions arise with regard to how scarce health care resources ought to be used: (1) How much health care should be produced? (2) How should health care be distributed? The first question concerns the appropriate combination in which health services ought to be produced in relation to all other goods and services in the overall economy. If more health care is produced, a society may have to do less with some other goods, such as food, clothing, and transportation. The second question affects individuals at a more personal level. It deals with who can receive which type of medical service, and how access to services will be restricted.

The production, distribution, and subsequent consumption of health care must be perceived as equitable by a society. No society has found a perfectly equitable method to distribute limited economic resources. In fact, any method of resource distribution leaves some inequalities. Societies, therefore, try to allocate resources according to some guiding principles acceptable to each society. Such principles are ingrained in a society's value and belief system. It is recognized that not everyone can receive everything medical science has to offer.

A just and fair allocation of health care poses conceptual and practical difficulties; hence, a theory of justice needs to resolve the problem of health care allocation (Jonsen

1986). Even though various ethical principles can be used to guide decisions pertaining to just and fair allocation of health care in individual circumstances, the broad concern about equitable access to health services is addressed by two contrasting theories referred to as market justice and social justice.

Market Justice

The principle of ***market justice*** ascribes the fair distribution of health care to the market forces in a free economy. Medical care and its benefits are distributed based on people's willingness and ability to pay (Santerre and Neun 1996). In other words, people are entitled to purchase a share of the available goods and services that they value. They are to purchase these valued goods and services by means of wealth acquired through their own legitimate efforts. This is how most goods and services are distributed in a free market. The free market implies that giving people something they have not earned would be morally and economically wrong.

Chapter 1 discussed several characteristics that describe a free market. Those market characteristics are a precondition to the distribution of health care services according to market justice principles. It should be added that health care in the United States is not delivered in a free market; rather it is delivered in a quasi-market (see Chapter 1). Hence, market justice principles are only partially applicable to the US health care delivery system. Distribution of health care according to market justice is based on the following key assumptions:

- Health care is like any other economic good or service, the distribution and consumption of which are determined by free market forces of supply and demand.
- Individuals are responsible for their own achievements. From the rewards of their achievements, people are free to obtain various economic goods and services, including health care. When individuals pursue their own best interests, the interests of society as a whole are best served (Ferguson and Maurice 1970).
- People make rational choices in their decisions to purchase health care products and services. Grossman (1972) proposed that health is also an investment commodity. People consider the purchase of health services as an investment. For example, the investment has a monetary payoff when it reduces the number of sick days, making extra time available for productive activities, such as earning a living. Or it can have a utility payoff—a payoff in terms of satisfaction—when it makes life more enjoyable and fulfilling.
- People, in consultation with their physicians, know what is best for them. This assumption implies that people place a certain degree of trust in their physicians and that the physician–patient relationship is ongoing.
- The marketplace works best with minimum interference from the government. In other words, the market, rather than the government, can allocate health care resources in the most efficient and equitable manner.

Under market justice, the production of health care is determined by how much the consumers are willing and able to purchase at the prevailing market prices. Thus, prices and ability to pay ration the quantity and type of health care services people consume. The uninsured and those who lack

sufficient income to pay privately face barriers to obtaining health care. Such limitations to obtaining health care are referred to as "rationing by ability to pay" (Feldstein 1994), ***demand-side rationing***, or price rationing. To an extent, barriers faced by the uninsured would be overcome through charitable services.

The key characteristics and their implications under the system of market justice are summarized in Table 2–5. Market justice emphasizes individual, rather than collective, responsibility for health. It proposes private, rather than government, solutions to social problems of health.

Social Justice

The idea of social justice is at odds with the principles of capitalism and market justice. The term "social justice" was invented in the 19th century by the critics of capitalism to describe the "good society" (Kristol 1978). According to the principle of ***social justice***, the equitable distribution of health care is a societal responsibility, which is

Table 2–5 Comparison of Market Justice and Social Justice

Market Justice	Social Justice
Characteristics	
• Views health care as an economic good	• Views health care as a social resource
• Assumes free-market conditions for health services delivery	• Requires active government involvement in health services delivery
• Assumes that markets are more efficient in allocating health resources equitably	• Assumes that the government is more efficient in allocating health resources equitably
• Production and distribution of health care determined by market-based demand	• Medical resource allocation determined by central planning
• Medical care distribution based on people's ability to pay	• Ability to pay inconsequential for receiving medical care
• Access to medical care viewed as an economic reward of personal effort and achievement	• Equal access to medical services viewed as a basic right
Implications	
• Individual responsibility for health	• Collective responsibility for health
• Benefits based on individual purchasing power	• Everyone is entitled to a basic package of benefits
• Limited obligation to the collective good	• Strong obligation to the collective good
• Emphasis on individual well-being	• Community well-being supersedes that of the individual
• Private solutions to social problems	• Public solutions to social problems
• Rationing based on ability to pay	• Planned rationing of health care

best achieved by letting the government take over the production and distribution of health care. Social justice regards health care as a social good—as opposed to an economic good—that should be collectively financed and available to all citizens regardless of the individual recipient's ability to pay. The main characteristics and implications of social justice are summarized in Table 2–5.

Canadians and Europeans long ago reached a broad consensus that health care is a social good (Reinhardt 1994). Public health also has a social justice orientation (Turnock 1997). Under the social justice system, inability to obtain medical services because of a lack of financial resources is considered inequitable. Accordingly, a just distribution of health care must be based on need, not simply on one's ability to purchase in the marketplace (demand). Need for health care is determined either by the patient or by a health professional.

The principle of social justice is also based on certain assumptions:

- Health care is different from most other goods and services. Health-seeking behavior is governed primarily by need rather than by ability to pay.
- Responsibility for health is shared. Individuals are not held completely responsible for their condition because factors outside their control may have brought on the condition. Society is held responsible because individuals cannot control certain environmental factors, such as economic inequalities, unemployment, or unsanitary conditions.
- Society has an obligation to the collective good. The well-being of the community is superior to that of the individual. An unhealthy individual is a burden on society. A person carrying a deadly infection, for example, is a threat to society. Society, therefore, is obligated to cure the problem by providing health care to the individual, because, by doing so, the whole society would benefit.
- The government rather than the market can better decide through central planning how much health care to produce and how to distribute it among all citizens.

Just like true market justice does not exist in health care, true social justice also does not exist. This is because no society can afford to provide unlimited amounts of health care to all its citizens (Feldstein 1994). The government may offer insurance coverage to all, but subsequently has to find ways to limit the availability of certain health care services. For example, under social justice, the government decides how technology will be dispersed and who will be allowed access to certain types of costly high-tech services, even though basic services may be available to all. The government engages in ***supply-side rationing***, which is also referred to as ***planned rationing***, or nonprice rationing. In social justice systems, the government uses the term "health planning" to limit the supply of health care services, although the limited resources are often more equally dispersed throughout the country than is generally the case under a market justice system. It is because of the necessity to ration health care that citizens of a country can be given universal coverage but not universal access (see Chapter 1). Even when a covered individual has a medical need, depending on the nature of health services required, he or

she may have to wait until services become available.

Justice in the US Health Delivery System

In a quasi- or imperfect market, which characterizes health care delivery in the United States, elements of both market and social justice exist. In some areas, the principles of market and social justice complement each other. In other areas, the two present conflicts.

The two contrasting principles complement each other with employer-based health insurance for most middle-class working Americans (market justice) and publicly financed Medicare, Medicaid, and CHIP coverage for certain disadvantaged groups (social justice). Insured populations access health care services delivered mainly by private practitioners and private institutions (market justice). Tax-supported county and city hospitals, public health clinics, and community health centers can be accessed by the uninsured in areas where such services are available (social justice).

Market and social justice principles create conflicts when health care resources are not uniformly distributed throughout the United States, and there is a general shortage of primary care physicians (discussed in Chapter 4). Consequently, in spite of having public insurance, many Medicaid-covered patients have difficulty obtaining timely access, particularly in rural and inner-city areas. In part, this conflict is created by artificially low reimbursement from public programs whereas reimbursement from private payers is more generous.

In the past, market justice principles have been dominant in the United States, but the ACA promises to change that and swing the pendulum more toward social justice. Massive new government subsidies are available to many people who would purchase private insurance through government-run exchanges. Medicaid is being expanded significantly for low-income families. These expansions will be paid through a number of new taxes provided for in the ACA. However, as pointed out in Chapter 1, The ACA is not designed to achieve universal coverage; it may also not successfully achieve access for a large segment of the US population, particularly if the providers are unable to meet the law's demands within reimbursement constraints.

Limitations of Market Justice

The principles of market justice work well in the allocation of economic goods when their unequal distribution does not affect the larger society. For example, based on individual success, people live in different sizes and styles of homes, drive different types of automobiles, and spend their money on a variety of things, but the allocation of certain resources has wider repercussions for society. In these areas, market justice has severe limitations:

1. Market justice principles fail to rectify critical human concerns. Pervasive social problems, such as crime, illiteracy, and homelessness, can significantly weaken the fabric of a society. Indeed, the United States has recognized such issues and instituted programs based on social justice to combat the problems through added police protection, publicly supported education, and subsidized housing for many of the poor and elderly. Health care is an important social issue because it not only affects human

productivity and achievement but also provides basic human dignity.

2. Market justice does not always protect a society. Individual health issues can have negative consequences for society because ill health is not always confined to the individual. The AIDS epidemic is an example in which society can be put at serious risk. Initial spread of the SARS epidemic in Beijing, China was largely due to patients with SARS symptoms being turned away by hospitals because they were not able to pay in advance for the cost of the treatment. Similar to clean air and water, health care is a social concern that, in the long run, protects against the burden of preventable disease and disability, a burden that is ultimately borne by society.
3. Market justice does not work well in health care delivery. A growing national economy and prosperity in the past did not materially reduce the number of uninsured Americans. On the other hand, the number of uninsured increases during economic downturns. For example, during the 2007–2009 recession, 5 million Americans lost employment-based health insurance (Holahan 2011).

Integration of Individual and Population Health

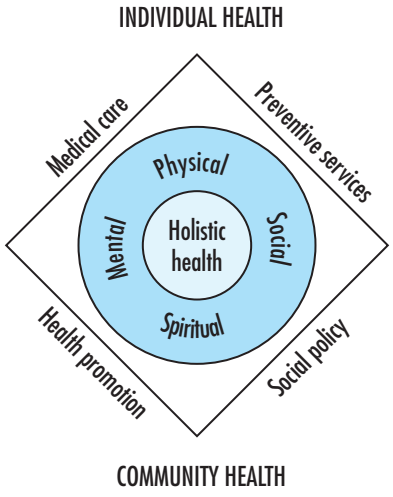
It has been recognized that typical emphasis on the treatment of acute illness in hospitals, biomedical research, and high technology has not significantly improved the population's health. Consequently, the medical model should be integrated with a disease-prevention, health-promotion, primary care–based model. Society will always need the benefits of modern science and technology for the treatment of disease, but disease prevention, health promotion, and primary care can prevent certain health problems, delay the onset of disease, and prevent disability and premature death. An integrated approach will improve the overall health of the population, enhance people's quality of life, and conserve health care resources.

The real challenge for the health care delivery system is to incorporate the medical and wellness models within the holistic context of health. The Ottawa Charter for Health Promotion, for instance, mentions caring, holism, and ecology as essential issues in developing strategies for health promotion (de Leeuw 1989). "Holism" and "ecology" refer to the complex relationships that exist among the individual; the health care delivery system; and the physical, social, cultural, and economic environmental factors. In addition, as the increasing body of research points out, the spiritual dimension must be incorporated into the integrated model.

Another equally important challenge for the health care delivery system is to focus on both individual and population health outcomes. The nature of health is complex, and the interrelationships among the physical, mental, social, and spiritual dimensions are not well understood. How to translate this multidimensional framework of health into specific actions that are efficiently configured to achieve better individual and community health is one of the greatest challenges health care systems face.

For an integrated approach to become reality, resource limitations make it necessary to deploy the best American ingenuity toward health-spending reduction, elimination of

Figure 2–5 Integrated Model for Holistic Health.



wasteful care, promotion of individual responsibility and accountability for one's health, and improved access to basic services. In a broad sense, these services include medical care, preventive services, health promotion, and social policy to improve education, lifestyle, employment, and housing (Figure 2–5). The Ottawa Charter has proposed achieving health objectives through social public policy and community action. An integrated approach also necessitates creation of a new model for training health care professionals by forming partnerships with the community (Henry 1993). The subsequent paragraphs describe examples of community partnership reflected in community health assessment and *Healthy People* initiatives.

Community Health Assessment

Community health assessment is a method used to conduct broad assessments of populations at a local or state level. For integrating individual and community health, the assessment is best conducted by collaboration among public health agencies, hospitals, and other health care providers. Community hospitals, in particular, are increasingly held accountable for the health status of the communities in which they are located. To fulfill this mission, hospitals must first conduct a health assessment of their communities. Such assessments provide broad perspectives of the populations' health and point to specific needs that health care providers can address. These assessments can help pinpoint interventions that should be given priority to improve the populations' health status or address critical issues pertaining to certain groups within the populations.

Healthy People Initiatives

Since 1980, the United States has undertaken 10-year plans outlining certain key national health objectives to be accomplished during each of the 10-year periods. The objectives are developed by a consortium of national and state organizations under the leadership of the US Surgeon General. The first of these programs, with objectives for 1990, provided national goals for reducing premature deaths among all age groups and for reducing the average number of days of illness among those over the age of 65. A final review of this program concluded that positive changes in premature death had been achieved for all age categories except adolescents, and illness among the elderly had not been reduced. However, the review set the stage for development and modification of goals and objectives for the subsequent 10-year program (Chrvala and Bulger 1999).

Healthy People 2000: National Health Promotion and Disease Prevention Objectives identified three main goals to be reached by the year 2000: Increase the span of healthy life for Americans, reduce health disparities,

and achieve access to preventive services by all Americans (DHHS 1992). According to the final review, the major accomplishments included surpassing the targets for reducing deaths from coronary heart disease and cancer; meeting the targets for incidence rates for AIDS and syphilis, mammography exams, violent deaths, and tobacco-related deaths; nearly meeting the targets for infant mortality and number of children with elevated levels of lead in blood; and making some progress toward reducing health disparities among special populations.

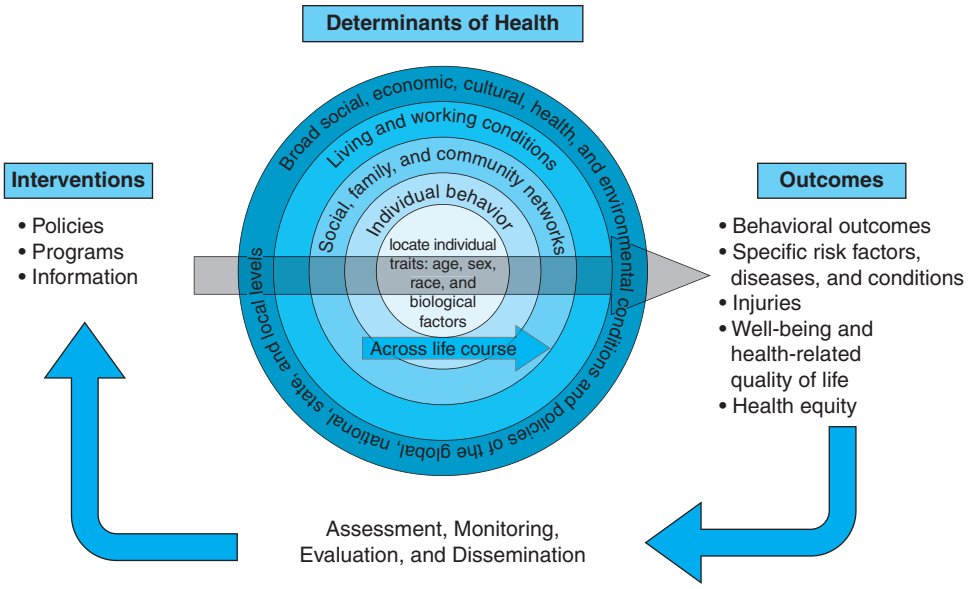
Healthy People 2010: Healthy People in Healthy Communities continued in the earlier traditions as an instrument to improve the health of the American people in the first decade of the 21st century. It focused on two broad goals: (1) to increase quality and years of healthy life and (2) to eliminate health disparities. It went a step beyond the previous initiatives by emphasizing the role of community partners—businesses; local governments; and civic, professional, and religious organizations—as effective agents for improving health in their local communities (DHHS 1998). The final report revealed that 23% of the targets were met or exceeded and the nation had made progress in 48% of the targets. Specifically, life expectancy at birth, expected years in good or better health, and expected years free of activity limitations all improved, while expected years free of selected chronic diseases decreased. However, the goal of reducing health disparities has not been achieved. Health disparities in about 80% of the objectives have not changed and even increased in another 13% of the objectives (NCHS 2012). Hence, challenges remain in the reduction of chronic conditions and health disparities among population groups.

Launched in 2010, *Healthy People 2020* (DHHS 2010b) has a five-fold mission: (1) Identify nationwide health improvement priorities. (2) Increase public awareness and understanding of the determinants of health, disease, and disability and the opportunities for progress. (3) Provide measurable objectives and goals that can be used at the national, state, and local levels. (4) Engage multiple sectors to take actions that are driven by the best available evidence and knowledge. (5) Identify critical research and data collection needs. Its four overarching goals are to:

1. Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death.
2. Achieve health equity, eliminate disparities, and improve the health of all groups.
3. Create social and physical environments that promote good health for all.
4. Promote quality of life, healthy development, and healthy behaviors across all life stages.

The overarching goals are in line with the tradition of earlier *Healthy People* initiatives but place particular emphasis on the determinants of health. Figure 2–6 illustrates the Action Model to Achieve *Healthy People 2020* Overarching Goals. This model illustrates that interventions (i.e., policies, programs, information) influence the determinants of health at four levels: (1) individual; (2) social, family, and community; (3) living and working conditions; and (4) broad social, economic, cultural, health, and environmental conditions, leading to improvement in outcomes. Results are to be demonstrated through assessment, monitoring, and evaluation, and the dissemination of findings would provide feedback for future interventions.

Figure 2–6 Action Model to Achieve US *Healthy People 2020* Overarching Goals.



Source: Courtesy of U.S. Department of Health and Human Services. The Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2020. 2008. Phase I report: Recommendations for the framework and format of Healthy People 2020. Section IV. Advisory Committee findings and recommendations.

Healthy People 2020 is differentiated from previous *Healthy People* initiatives by including multiple new topic areas to its objective list, such as adolescent health, genomics, global health, health communication and health information technology, and social determinants of health. *Healthy People 2020* has 42 topic areas, with 13 new areas (underlined in Table 2–6).

Measurement of *Healthy People 2020*

Healthy People 2020 establishes four foundational health measures to monitor progress toward achieving its goals. The foundational health measures include general health status, health-related quality of life and well-being, determinants of health, and disparities. Measures of general health status include life expectancy, healthy life expectancy, years of potential life lost, physically and mentally unhealthy days, self-assessed health status, limitation of activity, and chronic disease prevalence. Measures of health-related quality of life and well-being include physical, mental, and social health-related quality of life; well-being/satisfaction; and participation in common activities. *Healthy People 2020* defines determinants of health as "a range of personal, social, economic, and environmental factors that influence health status. Determinants of health include such things as biology, genetics, individual behavior, access to health services, and the environment in which people are born, live, learn, play, work, and age." Measures of disparities and inequity include differences in health status based on race/ethnicity, gender, physical and mental ability, and geography (DHHS 2010b).

Table 2–6 List of *Healthy People 2020* Topic Areas

1. Access to Health Services
2. Adolescent Health
3. Arthritis, Osteoporosis, and Chronic Back Conditions
4. Blood Disorders and Blood Safety
5. Cancer
6. Chronic Kidney Disease
7. Dementias, Including Alzheimer's Disease
8. Diabetes
9. Disability and Health
10. Early and Middle Childhood
11. Educational and Community-Based Programs
12. Environmental Health
13. Family Planning
14. Food Safety
15. Genomics
16. Global Health
17. Health Communication and Health Information Technology
18. Healthcare-Associated Infections
19. Health-Related Quality of Life and Well-Being
20. Hearing and Other Sensory or Communication Disorders
21. Heart Disease and Stroke
22. HIV
23. Immunization and Infectious Diseases
24. Injury and Violence Prevention
25. Lesbian, Gay, Bisexual, and Transgender Health
26. Maternal, Infant, and Child Health
27. Medical Product Safety
28. Mental Health and Mental Disorders
29. Nutrition and Weight Status
30. Occupational Safety and Health
31. Older Adults
32. Oral Health
33. Physical Activity
34. Preparedness
35. Public Health Infrastructure
36. Respiratory Diseases
37. Sexually Transmitted Diseases
38. Sleep Health
39. Social Determinants of Health
40. Substance Abuse
41. Tobacco Use
42. Vision

Note: New areas are underlined.

There has been ongoing review of how well the health care system is working toward achievement of the delineated goals. The findings of these ongoing studies are compared to the baseline data from the beginning of the 10-year period to determine if adequate progress has occurred.

Global health is also an important topic area in *Healthy People 2020*. The measurement of global health focuses on two aspects. The first is to measure the reduction of global diseases in the United States including malaria and tuberculosis (TB). The second is to measure "global capacity in support of the International Health Regulations to detect and contain emerging health threats" (DHHS 2010b). The indicators include the number of Global Disease Detection (GDD) Regional Centers Worldwide, the number of public health professionals trained by GDD programs worldwide, and the number of

diagnostic tests established or improved by GDD programs (DHHS 2010b).

Summary

The delivery of health care is primarily driven by the medical model, which emphasizes illness rather than wellness. Holistic concepts of health, along with the integration of medical care with preventive and health promotional efforts, need to be adopted to significantly improve the health of Americans. Such an approach would also require individual responsibility for one's own health-oriented behaviors, as well as community partnerships to improve both personal and community health. An understanding of the determinants of health, health education, community health assessment, and national initiatives, such as *Healthy People*, are essential to accomplishing these goals. *Healthy People 2020*, launched in 2010, continues its goals of improving health and eliminating disparities. Public health has gained increased importance because of a growing recognition of its role in health protection, environmental health, and preparedness for natural disasters and bioterrorism. Public health has now become global in its scope.

The various facets of health and its determinants, and ongoing initiatives in the areas of prevention, health promotion, health protection, and equality are complex undertakings and require substantial financial resources. Objective measures play a critical role in evaluating the success of various programs, as well as for directing future planning activities.

The broad concern about equitable access to health services is addressed by the contrasting theories of market justice and social justice. Countries offering universal coverage have adopted the principles of social justice under which the government finances health care services and decides on the distribution of those services. However, because no country can afford to provide unlimited amounts of health care to all citizens, supply-side rationing becomes inevitable. Many of the characteristics of the US health care system trace back to the beliefs and values underlying the American culture. The principles of market justice have been dominant, but social justice is also apparent in publicly financed programs and in the health reform initiatives under the ACA. Under market justice, not all citizens have health insurance coverage, a phenomenon called demand-side rationing.

ACA Takeaway

- Medicare and private health plans are required to cover a range of recommended preventive services with no out-of-pocket costs.
- The ACA has provided funds to expand preventive national efforts.
- Wellness grants are made available to small businesses to encourage wellness programs.
- The ACA will move US health care toward social justice. Yet, it is unlikely to achieve justice and equity in delivering access to health care for all Americans.

Test Your Understanding

Terminology

activities of daily living
acute condition
agent
bioterrorism
cases
chronic condition
community health assessment
crude rates
demand-side rationing
emigration
environment
environmental health
epidemic
fertility
health care
health determinants
health risk appraisal
holistic health
holistic medicine
host
iatrogenic illnesses
immigration
incidence
instrumental activities of daily living
life expectancy
market justice
medical model
migration
morbidity
mortality
natality
planned rationing
population at risk
prevalence
primary prevention
public health
quality of life
risk factor
secondary prevention
social contacts
social justice
social resources
subacute condition
supply-side rationing
surge capacity
tertiary prevention
utilization

Review Questions

1. What is the role of health risk appraisal in health promotion and disease prevention?
2. Health promotion and disease prevention may require both behavioral modification and therapeutic intervention. Discuss.
3. Discuss the definitions of health presented in this chapter in terms of their implications for the health care delivery system.
4. What are the main objectives of public health?
5. Discuss the significance of an individual's quality of life from the health care delivery perspective.
6. What "preparedness"-related measures have been taken to cope with potential natural and man-made disasters since the tragic events of 9/11? Assess their effectiveness.
7. The Blum model points to four key determinants of health. Discuss their implications for health care delivery.
8. What has been the main cause of the dichotomy in the way physical and mental health issues have traditionally been addressed by the health care delivery system?
9. Discuss the main cultural beliefs and values in American society that have influenced health care delivery and how they have shaped the health care delivery system.

10. Briefly describe the concepts of market justice and social justice. In what way do the two principles complement each other and in what way are they in conflict in the US system of health care delivery?
11. Describe how health care is rationed in the market justice and social justice systems.
12. To what extent do you think the objectives set forth in *Healthy People* initiatives can achieve the vision of an integrated approach to health care delivery in the United States?
13. What are the major differences of *Healthy People 2020* from the previous *Healthy People* initiatives?
14. How can health care administrators and policymakers use the various measures of health status and service utilization? Please illustrate your answer.
15. Using the data given in the table below:
    (a) Compute crude birth rates for 2005 and 2010.
    (b) Compute crude death rates for 2005 and 2010.
    (c) Compute cancer mortality rates for 2005 and 2010.
    (d) Answer the following questions:
        (i) Did the infant death rates improve between 2005 and 2010?
        (ii) What conclusions can you draw about the demographic change in this population?
        (iii) Have efforts to prevent death from heart disease been successful in this population?

Population	2005	2010
Total	248,710	262,755
Male	121,239	128,314
Female	127,471	134,441
Whites	208,704	218,086
Blacks	30,483	33,141
Number of live births	4,250	3,840
Number of infant deaths (birth to 1 year)	39	35
Number of total deaths	1,294	1,324
Deaths from heart disease	378	363
Deaths from cancer	336	342

REFERENCES

Agency for Healthcare Research and Quality. 2006. The Medical Expenditure Panel Survey. Available at: http://www.ahrq.gov/. Accessed December 2008.

American Institute for Cancer Research. 1996. *Food, nutrition and the prevention of cancer: A global perspective.* Washington, DC. Available at: http://www.aicr.org/site/PageServer. Accessed December 2000.

American Public Health Association. 2013. Prevention and Public Health Fund. Updated chart of Prevention and Public Health Fund allocations, FY 2010 enacted through FY 2014 request. Available at: http://www.apha.org/NR/rdonlyres/A448A5CD-6BFE-4AA5-B25D-DF59C195484E/0/PPH2010201441613.pdf. Accessed December 17, 2013.

Anderko, L., et al. 2012. Promoting prevention through the Affordable Care Act: Workplace wellness. *Preventing Chronic Disease* 9:E175.

Ansari, Z., et al. 2003. A public health model of the social determinants of health. *Sozial und Präventivmedizin/Social and Preventive Medicine* 48, no. 4: 242–251.

Blum, H.L. 1981. *Planning for health*. 2nd ed. New York: Human Sciences Press.

Bonnett, C., and B.C. Peery 2007. Surge capacity: A proposed conceptual framework. *The American Journal of Emergency Medicine* 25: 297–306.

Breslow, L. 1972. A quantitative approach to the World Health Organization definition of health: Physical, mental, and social well-being. *International Journal of Epidemiology* 4: 347–355.

Centers for Disease Control and Prevention (CDC). 1999. *Morbidity and mortality weekly report* 48, no. 29.

Centers for Disease Control and Prevention (CDC). 2007. Avian influenza (bird flu). Available at: http://www.cdc.gov/flu/avian/. Accessed January 2007.

Centers for Disease Control and Prevention (CDC). 2010a. Establishing a holistic framework to reduce inequities in HIV, Viral Hepatitis, STDs, and Tuberculosis in the United States. Available at: http://www.cdc.gov/socialdeterminants. Accessed November 2010.

Centers for Disease Control and Prevention (CDC). 2010b. Office of Public Health Preparedness and Response. Public health preparedness: Strengthening the Nation's emergency response state by state. Available at: http://www.bt.cdc.gov/publications/2010phprep. Accessed November 2010.

Centers for Disease Control and Prevention (CDC). 2012. SARS basics fact sheet. Available at: http://www.cdc.gov/sars/about/fs-SARS.html. Accessed October 2013.

Centers for Disease Control and Prevention (CDC). 2013a. National Diabetes Prevention Program. http://www.cdc.gov/diabetes/prevention/about.htm.

Centers for Disease Control and Prevention (CDC). 2013b. National Diabetes Prevention Program. Funded Organizations. Retrieved August 19, 2013 from http://www.cdc.gov/diabetes/prevention/foa/index.htm.

Chida, Y., et al. 2009. Religiosity/spirituality and mortality. *Pshychotherapy and Psychosomatics* 78: 81–90.

Cohen, M.H. 2003. *Future Medicine.* Ann Arbor: University of Michigan Press.

Cohen, S., and K. Mulvaney. 2005. Field observations: Disaster medical assistance team response for Hurricane Charley, Punta Gorda, Florida, 2004. *Disaster Management and Response*, 22–27.

Chrvala, C.A., and R.J. Bulger (Eds.). 1999. *Leading health indicators for Healthy People 2010: Final report*. Washington, DC: National Academy of Sciences.

Dahlgren, G., and M. Whitehead. 2006. European strategies for tackling social inequities in health: Concepts and principles for tackling social inequities in health: Levelling up (part 2). Denmark: World Health Organization: Studies on Social and Economic Determinants of Population Health no. 3. Available at: http://www.euro.who.int/__data/assets/pdf_file/0018/103824/E89384.pdf. Accessed December 2010.

Davis, D.L., and P.S. Webster. 2002. The social context of science: Cancer and the environment. *The Annals of the American Academy of Political and Social Science* 584, November 13–34.

de Leeuw, E. 1989. Concepts in health promotion: The notion of relativism. *Social Science and Medicine* 29, no. 11: 1281–1288.

Department of Health and Human Services (DHHS). 1992. *Healthy People 2000: National health promotion and disease prevention objectives*. Boston: Jones & Bartlett Publishers.

Department of Health and Human Services (DHHS). 1998. *Healthy People 2010 objectives: Draft for public comment*. Washington, DC: US Government Printing Office.

Department of Health and Human Services (DHHS). 2004. *The health consequences of smoking: A report of the Surgeon General*. Available at: http://www.surgeongeneral.gov/library/smokingconsequences/. Accessed December 2010.

Department of Health and Human Services (DHHS). 2006. DASH Eating Plan. Available at: http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf. Accessed December 17, 2013.

Department of Health and Human Services (DHHS). 2010a. *Summary of the prevention and wellness initiative*. Available at: http://http://www.cdc.gov/chronicdisease/recovery/docs/PW_Community_fact_sheet_final.pdf. Accessed November 2010.

Department of Health and Human Services (DHHS). 2010b. *Healthy People 2020*. Available at: http://healthypeople.gov/2020. Accessed December 2010.

Department of Health and Human Services (DHHS). 2011a. *National Health Security Strategy 2009*. Available at: http://www.phe.gov/Preparedness/planning/authority/nhss/Pages/default.aspx. Accessed August 2013.

Department of Health and Human Services (DHHS). 2011b. $10 million in Affordable Care Act funds to help create workplace health programs. News Release. June 23, 2011. Available at: http://www.hhs.gov/news/press/2011pres/06/20110623a.html. Accessed December 17, 2013.

Department of Health and Human Services (DHHS). 2012. *Medicare Preventive Services*. Available at: http://www.hhs.gov/healthcare/prevention/seniors/medicare-preventive-services.html. Accessed August 2013.

Department of Health and Human Services (DHHS). 2013. Affordable Care Act rules on expanding access to preventive services for women. Available at: http://www.hhs.gov/healthcare/facts/factsheets/2011/08/womensprevention08012011a.html. Accessed December 17, 2013.

Dever, G.E. 1984. *Epidemiology in health service management*. Gaithersburg, MD: Aspen Publishers, Inc.

Draper, P. 2012. An integrative review of spiritual assessment: Implications for nursing management. *Journal of Nursing Management* 20, no. 8: 970–980.

Ethics Committee, Society for Academic Emergency Medicine. 1992. An ethical foundation for health care: An emergency medicine perspective. *Annals of Emergency Medicine* 21, no. 11: 1381–1387.

Feldstein, P.J. 1994. *Health policy issues: An economic perspective on health reform*. Ann Arbor, MI: AUPHA/HAP.

Ferguson, C.E., and S.C. Maurice. 1970. *Economic analysis*. Homewood, IL: Richard D. Irwin.

Friedman, G.D. 1980. *Primer of epidemiology*. New York: McGraw-Hill.

Grossman, M. 1972. On the concept of health capital and the demand for health. *Journal of Political Economy* 80, no. 2: 223–255.

Hatch, R.L., et al. 1998. The spiritual involvement and beliefs scale: Development and testing of a new instrument. *Journal of Family Practice* 46: 476–486.

Henry, R.C. 1993. Community partnership model for health professions education. *Journal of the American Podiatric Medical Association* 83, no. 6: 328–331.

Hick, J., et al. 2004. Health care facility and community strategies for patient care surge capacity. *Annals of Emergency Medicine, 44*, 253–261.

Hoff, A., et al. 2008. Religion and reduced cancer risk—what is the explanation? A review. *European Journal of Cancer* 44, no. 17: 2573–2579.

Holahan, J. 2011. The 2007-09 recession and health insurance coverage. *Health Affairs* 30, no. 1: 145–152.

Ibrahim, M.A. 1985. *Epidemiology and health policy*. Gaithersburg, MD: Aspen Publishers, Inc.

Institute of Medicine, National Academy of Sciences (IOM). 1988. *The future of public health*. Washington, DC: National Academies Press.

Jonsen, A.R. 1986. Bentham in a box: Technology assessment and health care allocation. *Law, Medicine, and Health Care* 14, no. 3–4: 172–174.

Kane, R.L. 1988. Empiric approaches to prevention in the elderly: Are we promoting too much? In: *Health promotion and disease prevention in the elderly*. R. Chernoff and D.A. Lipschitz, eds. New York: Raven Press. p. 127–141.

Katz, S., and C.A. Akpom. 1979. A measure of primary sociobiological functions. In: *Sociomedical health indicators*. J. Elinson and A.E. Siegman, eds. Farmingdale, NY: Baywood Publishing Co. p. 127–141.

Kawachi, I., et al. 1997. Social capital, income inequality, and mortality. *American Journal of Public Health* 87: 1491–1498.

Kawachi, I., et al. 1999. Social capital and self-rated health: A contextual analysis. *American Journal of Public Health* 89: 1187–1193.

Kearns, R., et al. 2013. Disaster planning: Transportation resources and considerations for managing a burn disaster. *Journal of Burn Care and Research*, 1–12.

Kristol, I. 1978. A capitalist conception of justice. In: *Ethics, free enterprise, and public policy: Original essays on moral issues in business*. R.T. De George and J.A. Pichler, eds. New York: Oxford University Press. p. 57–69.

Lasker, R.D. 1997. *Medicine and public health: The power of collaboration*. New York: The New York Academy of Medicine.

Larson, C., and Mercer A. Global health indicators: An overview. *CMAJ.* no. 171–10: 1199–200.

Macfarlane, G.J., and A.B. Lowenfels. 1994. Physical activity and colon cancer. *European Journal of Cancer Prevention* 3, no. 5: 393–398.

Marwick, C. 1995. Should physicians prescribe prayer for health? Spiritual aspects of well-being considered. *Journal of the American Medical Association* 273, no. 20: 1561–1562.

McKee, M. 2001. Measuring the efficiency of health systems. *British Medical Journal* 323, no. 7308: 295–296.

Monod, S., et al. 2011. Instruments measuring spirituality in clinical research: A systematic review. *Journal of General Internal Medicine* 26, no. 11: 1345–1357.

National Center for Health Statistics (NCHS). 2012. *Healthy People 2010 Final Review*. Hyattsville, MD. Available at: http://www.cdc.gov/nchs/healthy_people/hp2010/hp2010_final_review.htm. Accessed August 2013.

National Prevention Council. 2011. *Nation prevention strategy: America's plan for better health and wellness*. Washington, DC: US Department of Health and Human Services.

Oman, D., et al. 2002. Religious attendance and cause of death over 31 years. *International Journal of Psychiatry and Medicine* 32: 69–89.

Ostir, G.V., et al. 1999. Disability in older adults 1: Prevalence, causes, and consequences. *Behavioral Medicine* 24, no. 4: 147–156.

Pantell, M., et al. 2013. Social isolation: A predictor of mortality comparable to traditional clinical risk factors. *American Journal of Public Health* 103, no. 11: 2056–2062.

Parsons, T. 1972. Definitions of health and illness in the light of American values and social structure. In: *Patients, physicians and illness: A sourcebook in behavioral science and health*. 2nd ed. E.G. Jaco, ed. New York: Free Press.

Partnership to Fight Chronic Disease (PFCD). 2009. *Almanac of Chronic Disease.* Available at: http://www.fightchronicdisease.org/sites/fightchronicdisease.org/files/docs/2009AlmanacofChronicDisease_updated81009.pdf. Accessed December 17, 2013.

Pasley, B.H., et al. 1995. Excess acute care bed capacity and its causes: The experience of New York State. *Health Services Research* 30, no. 1: 115–131.

Peters, K.E., et al. 2001. *Cooperative actions for health programs: Lessons learned in medicine and public health collaboration*. Chicago: American Medical Association.

Pincus, T., et al. 1998. Social conditions and self-management are more powerful determinants of health than access to care. *Annals of Internal Medicine* 129, no. 5: 406–411.

Plotkin, S.L., and S.A. Plotkin. 1999. A short history of vaccination. In: *Vaccines*, 3rd ed. S.A. Plotkin and W.A. Orenstein, eds. Philadelphia, PA: W.B. Saunders.

Post, S.G., et al. 2000. Physicians and patient spirituality: Professional boundaries, competency, and ethics. *Annals of Internal Medicine* 132, no. 7: 578–583.

Reinhardt, U.E. 1994. Providing access to health care and controlling costs: The universal dilemma. In: *The nation's health*, 4th ed. P.R. Lee and C.L. Estes, eds. Boston: Jones & Bartlett Publishers. p. 263–278.

Robert Wood Johnson Foundation. 2010. *Chronic care: Making the case for ongoing care*. Available at: http://www.rwjf.org/pr/product.jsp?id=50968. Accessed April 25, 2011.

Roberts, J.A., et al. 1997. Factors influencing the views of patients with gynecologic cancer about end-of-life decisions. *American Journal of Obstetrics and Gynecology* 176: 166–172.

Rosen, G. 1993. *A history of public health*. Baltimore, MD: Johns Hopkins University Press.

Ross, L. 1995. The spiritual dimension: Its importance to patients' health, well-being and quality of life and its implications for nursing practice. *International Journal of Nursing Studies* 32, no. 5: 457–468.

Santerre, R.E., and S.P. Neun. 1996. *Health economics: Theories, insights, and industry studies*. Chicago: Irwin.

Saward, E., and A. Sorensen. 1980. The current emphasis on preventive medicine. In: *Issues in health services*. S.J. Williams, ed. New York: John Wiley & Sons. p. 17–29.

Schneider, M.J. 2000. *Introduction to public health*. Gaithersburg, MD: Aspen Publishers, Inc.

Shi, L., and J. Johnson, eds. 2014. *Public health administration: Principles for population-based management*. 3rd ed. Burlington, MA: Jones & Bartlett Learning.

Shi, L., and B. Starfield. 2001. Primary care physician supply, income inequality, and racial mortality in US metropolitan areas. *American Journal of Public Health* 91, no. 8: 1246–1250.

Shi, L., et al. 1999. Income inequality, primary care, and health indicators. *Journal of Family Practice* 48, no. 4: 275–284.

Shi, L., et al. 2002. Primary care, self-rated health, and reduction in social disparities in health. *Health Services Research* 37, no. 3: 529–550.

Smith, B.C. 1979. *Community health: An epidemiological approach*. New York: Macmillan Publishing Co. p. 197–213.

Stopford, B. 2005. The National Disaster Medical System—America's medical readiness force. *Disaster Management and Response*, 53–56.

Swanson, C.S. 1995. A spirit-focused conceptual model of nursing for the advanced practice nurse. *Issues in Comprehensive Pediatric Nursing* 18, no. 4: 267–275.

Timmreck, T.C. 1994. *An introduction to epidemiology*. Boston: Jones & Bartlett Publishers.

Turnock, B.J. 1997. *Public health: What it is and how it works*. Gaithersburg, MD: Aspen Publishers, Inc.

US Census Bureau. 1995. Population profile of the United States 1995. Available at: http://www.census.gov/population/pop-profile/p23-189.pdf. Accessed December 17, 2013.

Vella-Brodrick, D.A., and F.C. Allen. 1995. Development and psychometric validation of the mental, physical, and spiritual well-being scale. *Psychological Reports* 77, no. 2: 659–674.

Ward, B. 1995. Holistic medicine. *Australian Family Physician* 24, no. 5: 761–762, 765.

Ward, B.W., and J.S. Schiller. 2010. Prevalence of multiple chronic conditions among US adults: Estimates from the National Health Interview Survey. *Preventing Chronic Diseases* 10: 120203.

Wilkinson, R.G. 1997. Comment: Income, inequality, and social cohesion. *American Journal of Public Health* 87: 1504–1506.

WHO Commission on Social Determinants of Health. 2007. *A Conceptual Framework for Action on the Social Determinants of Health*. Geneva, Switzerland: World Health Organization. Available at: http://www.who.int/social_determinants/resources/csdh_framework_action_05_07.pdf. Accessed November 4, 2009.

World Health Organization (WHO). 1948. *Preamble to the constitution*. Geneva, Switzerland: Author.

World Health Organization (WHO). 2003. *WHO definition of palliative care*. Geneva, Switzerland: Author.

World Health Organization (WHO). 2011. *Noncommunicable diseases country profiles*. Available at: http://www.who.int/nmh/countries/usa_en.pdf. Accessed August 2013.

World Health Organization (WHO). 2013. *Pandemic influenza preparedness framework*. Available at: http://www.who.int/influenza/resources/pip_framework/en/. Accessed August 2013.