

CHAPTER 2



AP/Wide World Photos

The Social Sources of Illness

In 1964, Dr. Margrethe (“Grethe”) Rask left her native Denmark to work in Central Africa. For several years, she worked at a primitive hospital in northern Zaire, where, as her former colleagues described (Shilts, 1987: 4–7), basic supplies were woefully lacking:

You just used needles again and again until they wore out; once gloves had worn through, you risked dipping your hands in your patient’s blood because that was what needed to be done. The lack of rudimentary supplies meant that a surgeon’s work had risks that doctors in the developed world could not imagine.

In the early 1970s, Rask began working at a major hospital in the capital city of Kinshasa. By Christmas 1976:

She was thin, losing weight from a mysterious diarrhea. She had been suffering from the vague yet persistent malaise for two years now, since her time in the impoverished northern villages. In 1975, the problem had receded briefly after drug treatments, but for the past year, nothing had seemed to help. The surgeon’s weight dropped further, draining and weakening her with each passing day.

Even more alarming was the disarray in the forty-six-year-old woman’s lymphatic system, the glands that play the central role in the body’s never-ending fight to make itself immune from disease. All of Grethe’s lymph glands were swollen and had been for nearly two years. Normally, a lymph node might swell here or there to fight this or that infection, revealing a small lump on the neck, under an arm, or perhaps in the groin. There didn’t seem to be any reason for her glands to swell; there was no precise infection anywhere, much less anything that would cause such a universal enlargement of the lymph nodes all over her body. . . .

Suddenly, she could not breathe. Terrified, Grethe flew to Copenhagen, sustained on the flight by bottled oxygen. [Throughout 1977,] the top medical specialists of Denmark had tested and studied the surgeon. None, however, could fathom why the woman should, for no apparent reason, be dying. There was also the curious array of health problems that suddenly appeared. Her mouth became covered with yeast infections. Staph infections spread in her blood. Serum tests showed that something had gone awry in her immune system; her body lacked T-cells, the quarterbacks in the body's defensive line against disease. But biopsies showed she was not suffering from a lymph cancer that might explain not only the T-cell deficiency but her body's apparent inability to stave off infection. The doctors could only gravely tell her that she was suffering from progressive lung disease of unknown cause. And, yes, in answer to her blunt questions, she would die. . . .

On December 12, 1977, Margrethe P. Rask died. She was forty-seven years old.

A scant few years later, the cause of Grethe Rask's death—AIDS—would make headlines around the world. The news of a new, fatal infectious disease stunned both doctors and the public. Yet throughout history, new diseases have appeared and old diseases have disappeared. In this chapter, I provide a brief history of how patterns of disease have shifted over time, from the great epidemics of the past, to the late nineteenth-century decline of infectious diseases, to their modern reemergence. I then describe the current evidence regarding the main sources of premature death in the United States today, including tobacco, alcohol, medical errors, and motor vehicles.

Before we can understand patterns of disease, however, some basic concepts need to be defined.

An Introduction to Epidemiology

The first essential concept that students of health and illness need to understand is disease. To researchers working in health care, **disease** refers to a biological problem within an organism, whereas **illness** refers to the social experience and consequences of having a disease. So, for example, an individual who is infected with the poliomyelitis virus has the disease we call polio. When we refer, however, to subsequent changes in that individual's sense of self and social relationships, we should properly refer to these changes as consequences of the *illness* known as polio, not the *disease*. (I will discuss the meaning of illness in more detail in Chapter 5.)

The study of the distribution of disease within a population is known as **epidemiology**. This chapter and the next focus more specifically on **social epidemiology**, or the distribution of disease within a population according to social factors (such as social class or use of tobacco) rather than biological factors (such as blood pressure or genetics). For example, whereas biologists

might investigate whether heart disease is more common among those with high versus low cholesterol levels, social epidemiologists might investigate whether it is more common among smokers versus nonsmokers.

What do we mean when we say that a certain disease is “more common” among one group than another? One way is to look at how many people in each group have the disease. Relying on raw numbers, however, can distort our picture of a population’s health. For example, during 2003–2004, more than 500,000 persons in Brazil were infected with the virus that causes AIDS; but in the Bahamas, less than 7,000 persons were infected. On the surface, these numbers suggest that Brazil has a far greater AIDS problem than the Bahamas does. However, Brazil’s population is much larger than that of the Bahamas. To take this difference into account, epidemiologists would look at the *rate* rather than the number of AIDS cases in these two countries. **Rate** refers to the proportion of a specified population that experiences a given circumstance. We would use the following formula to calculate the rate of any event (whether disease, disability, birth, or death):

$$\frac{\text{Number of events in a given period}}{\text{Specified population during that period}} \times 10^n$$

Using this formula, we find that the rate of persons known to be infected with the virus that causes AIDS (calculated as the number of infected persons in a country divided by the country’s population) was 3,000 per 100,000 adults in the Bahamas but only 700 per 100,000 adults in Brazil (Population Reference Bureau, 2005). This tells us that AIDS affects a greater proportion of the population in the Bahamas than in Brazil and demonstrates the advantage of using rates rather than raw numbers.

Two particularly useful types of rates are incidence and prevalence rates. **Incidence** refers to the number of *new* occurrences of an event (disease, births, deaths, and so on) within a specified population during a specified period. **Prevalence** refers to the *total* number of cases within a specified population at a specified time—both those newly diagnosed and those diagnosed in previous years but still living with the condition under study. So, for example, to calculate the *incidence* rate of lung cancer in the United States this year, we would use the formula:

$$\frac{\text{Number of new cases of lung cancer } \textit{diagnosed} \textit{ this year in U.S.}}{\text{Population of U.S. this year.}} \times 100,000$$

To calculate the *prevalence* rate of lung cancer, we would use the formula:

$$\frac{\text{Number of persons } \textit{living with lung cancer in U.S. this year}}{\text{Population of U.S. this year.}} \times 100,000$$

In general, incidence better measures the spread of **acute illnesses**, such as chicken pox and cholera, that strike suddenly and disappear quickly—sometimes killing their victims, sometimes causing only a mild illness. Incidence also better measures rapidly spreading diseases such as AIDS. For example, to see how AIDS spread during the first decade after it was identified,

we would compare its incidence in 1981 to its incidence in 1991. Prevalence, on the other hand, better measures the frequency of **chronic illnesses**. Chronic illnesses are defined as those illnesses that typically last for many years, such as muscular dystrophy, asthma, and diabetes.

Two final terms often used in epidemiology are *morbidity* and *mortality*. **Morbidity** refers to symptoms, illnesses, and impairments; **mortality** refers to deaths. To assess the overall health of a population, epidemiologists typically calculate the rate of serious morbidity in a population (that is, the proportion suffering from serious illness), the rates of infant mortality and maternal mortality (that is, the proportion of infants and childbearing women who die during or soon after childbirth), and **life expectancy** (the average number of years individuals born in a certain year can expect to live).

But what if we want to compare the health of two populations that differ in some critical way? Most often, this issue arises when one population is younger than another. For example, Arizona's population is younger on average than is North Dakota's, and so we can expect Arizona to have a higher rate of death from drunk driving and a lower rate of death due to heart disease. To deal with this issue, epidemiologists use **age-adjusted rates**. These rates are calculated using standard statistical procedures that eliminate the effect of age differences among populations.

The next section uses epidemiological concepts and data to describe how patterns of disease have changed over time.

A Brief History of Disease

The European Background

The modern history of disease begins during the Middle Ages (approximately A.D. 800 to 1300), as commerce, trade, and cities began to swell (Kiple, 1993). These shifts sparked a devastating series of epidemics. The term **epidemic** refers to any significant increase in the numbers affected by a disease *or* to the first appearance of a new disease. In the fledgling European cities, people lived in close and filthy quarters, along with rats, fleas, and lice—perfect conditions for transmitting infectious diseases such as bubonic plague and smallpox. In addition, because city dwellers usually disposed of their sewage and refuse by tossing them out their windows, typhoid, cholera, and other waterborne diseases that live in human waste flourished. Simultaneously, the growth of long-distance trade helped epidemics spread to Europe from the Middle East, where cities had long existed and many diseases were **endemic** (that is, had established themselves within the population so they maintained a fairly stable prevalence). In addition, religious pilgrimages and crusades to Jerusalem helped spread diseases to Europe.

The resulting epidemics ravaged Europe. Waves of disease, including bubonic plague, leprosy, and smallpox, swept the continent. The worst of these was bubonic plague, popularly known as the “Black Death.” Between

1347 and 1351, plague killed at least 25 million people—between 25 percent and 50 percent of Europe’s population and as much as two-thirds of the population in some areas (Gottfried, 1983; J. Kelly, 2005).

Although the great **pandemics** (worldwide epidemics) began diminishing during the fifteenth and sixteenth centuries, average life expectancy increased only slightly, for malnutrition continued to threaten health (Kiple, 1993). By the early 1700s, however, life expectancy began to increase. This change cannot be attributed to any developments in health care, for folk healers had nothing new to offer, and medical doctors and surgeons (as will be described in more detail in Chapter 11) harmed at least as often as they helped. For example, former president George Washington died after his doctors, following contemporary medical procedures, “treated” his sore throat by cutting into a vein and draining two quarts of his blood over the course of a day (Kaufman, 1971: 3).

If advances in medicine did not cause the eighteenth-century decline in mortality, what did? Historians commonly trace this decline to a combination of social factors (Kiple, 1993). First, changes in warfare moved battles and soldiers away from cities, protecting citizens from both violence and the diseases that followed in soldiers’ wakes. Second, the development of new crops and new lands improved the nutritional status of the population and increased its ability to resist disease. Third, women began to have children less often and at later ages, increasing both women’s and children’s chances of survival. Fourth, women less often engaged in long hours of strenuous fieldwork, increasing their chances of surviving the physical stresses of childbearing. Infants, too, more often survived because mothers could more easily keep their children with them and breastfeed. (This lifestyle, however, would change soon for those women who became factory workers.)

Disease in the New World

As these changes were occurring in Europe, colonization by Europeans was decimating the native peoples of the New World (Kiple, 1993). The colonizers brought with them about fourteen new diseases—including influenza, measles, smallpox, scarlet fever, yellow fever, cholera, and typhoid—that had evolved in the Old World and for which the Native Americans had no natural immunities. These diseases ravaged the Native American population, in some cases wiping out entire tribes (Crosby, 1986). Conversely, life expectancy *increased* for those who emigrated from Europe to the colonies, for the New World’s vast lands and agricultural resources protected them against the malnutrition and overcrowding common in Europe.

The Epidemiological Transition

As industrialization and urbanization increased, mortality rates rose, especially among the urban poor. The main killer was **tuberculosis**, followed by influenza, pneumonia, typhus, and other infectious diseases. By the late

nineteenth century, however, deaths from infant mortality, child mortality, and infectious diseases began to decline rapidly. Between 1900 and 1930, life expectancy rose from 47 years to 60 years for whites and rose from 33 years to 48 years for African Americans (U.S. Bureau of the Census, 1975).

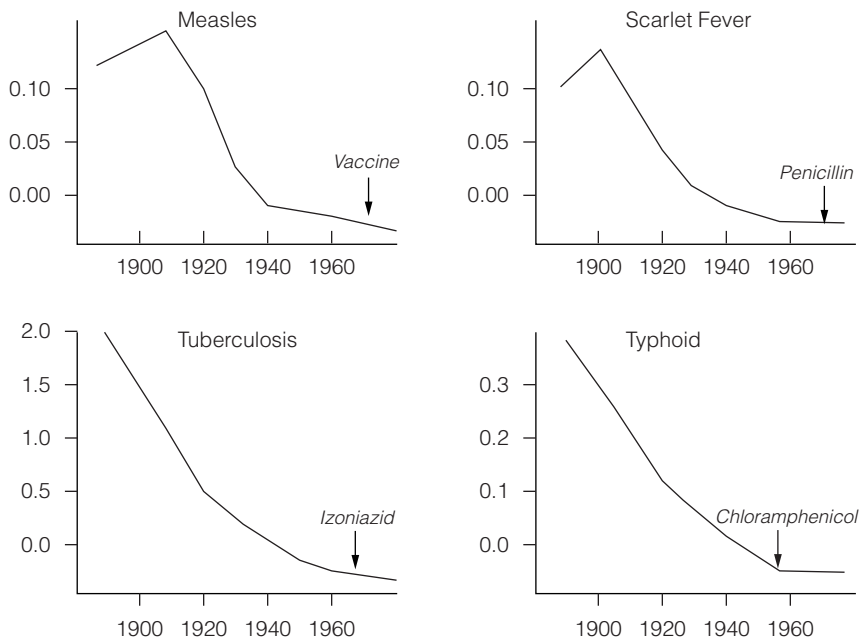
As infant mortality declined, families no longer felt obligated to have many children to ensure that one or two would survive long enough to get work and bring income into the household. At the same time, the national economy continued to shift from agriculture to industry, reducing couples' need to have children to work on the family farm. Similarly, employers increasingly offered pensions and other social benefits, so couples had less need to have children to care for them in their old age. Taken together, these trends produced a sharp decline in family size. Consequently, families could devote more resources to each child, further increasing their children's chances of survival.

As infectious diseases declined in importance, chronic and degenerative diseases, which can affect only those who live long enough for symptoms to develop, gained importance. Cancer, heart disease, and stroke became major causes of mortality, while arthritis and diabetes emerged as major sources of morbidity. Increasingly, too, conditions like heart disease, stroke, and hypertension shifted from being primarily diseases of the affluent to being disproportionately diseases of the poor.

The shift from a society characterized by infectious and parasitic diseases and low life expectancy to one characterized by degenerative and chronic diseases and high life expectancy is referred to as the **epidemiological transition** (Omran, 1971). This transition seems to occur around the world once a nation's mean per capita income reaches a threshold level (in 2005 dollars) of about \$7,365 (Wilkinson, 1996). As we will see in more detail in the next chapter, some countries have fully made the epidemiological transition but others have not.

Contrary to conventional wisdom, medical interventions such as vaccinations, new drugs, and new surgical techniques played little role in the epidemiological transition, which began more than 200 years ago in Western societies (Leavitt and Numbers, 1985; McKeown, 1979; McKinlay and McKinlay, 1977). In a series of dramatic graphs showing how mortality from several important diseases declined over time, McKinlay and McKinlay (1977) have demonstrated that most of these declines *preceded* the introduction of effective medical interventions (see Figure 2.1). For example, the death rate for tuberculosis declined steadily from greater than 3.5 per 1,000 in 1860 to .34 per 1,000 in 1946. Yet streptomycin, the first effective treatment for tuberculosis, was not introduced until 1947. Only polio and smallpox declined substantially after the introduction of medical interventions. Of these two, only the decline in polio can be confidently attributed to medical intervention, as we cannot separate the possible impact of inoculation on the rate of smallpox from the impact of the myriad other changes that occurred after inoculation was first widely adopted about 200 years ago. Similarly, the introduction of chlorination and filtering to city water

Figure 2.1 *The Fall in the Standardized Death Rate (per 1,000 Population) for Four Common Infectious Diseases in Relation to Specific Medical Measures, for the United States, 1900–1973*



Source: McKinlay and McKinlay (1977). Reprinted by permission of Blackwell Publishers.

systems virtually eliminated waterborne diseases like typhoid fever and dramatically reduced the rates of other infectious diseases, like pneumonia and tuberculosis. Cleaner water systems accounted for almost half of the drop in overall mortality rates and two-thirds of the drop in infant mortality rates between 1900 and 1940 (Cutler and Miller, 2005).

Researchers using generous assessments of the potential impact of modern medical care on life expectancy have concluded that medical care explains no more than one-sixth of the overall increase in life expectancy during the twentieth century (Bunker, Frazier, and Mosteller, 1994). Rather, most of this increase resulted from changes in the social environment (McKinlay and McKinlay, 1977). As nutrition and living conditions improved, so did individuals' ability to resist infection and to survive if they became infected. At the same time, although somewhat less importantly, public health improvements such as the development of clean water supplies and sanitary sewage systems increasingly protected individuals from exposure to disease-causing microbes.

Given the enormous improvements in life expectancy during the twentieth century, it was natural for scientists to assume that life expectancy would

continue to rise steadily along with incomes. However, Richard Wilkinson (1996, 2005), using a diverse wealth of data from studies conducted around the world, makes the convincing (and highly influential) argument that increases in average income above about \$7,365 (in 2005 dollars) bring only modest increases in life expectancy. Instead, further increases in life expectancy appear to occur not when *absolute incomes* increase but only when the *relative income differential* within a country narrows. In other words, if the gap in income between rich and poor narrows, as it has in Costa Rica, average life expectancy increases. Conversely, if the income gap widens, as happened following the collapse of the former Soviet Union, average life expectancy declines. As a result, life expectancy is greatest within countries like Sweden and Japan, which have experienced the epidemiological transition *and* have the smallest income gap between rich and poor, rather than in countries like the United States, which despite its great wealth has the widest income gap among the industrialized nations.

After weighing all the available evidence, Wilkinson argues that the key to the better health found in societies with small income gaps is the reduction in chronic psychosocial stresses. When income inequality is high, all citizens—regardless of their social class—must worry constantly about maintaining their social status and are susceptible to shame and depression when they cannot do so (Marmot, 2004; Wilkinson, 2005). As a result, individuals live with chronic stress, which makes it more difficult for their immune systems to fight disease. Moreover, to manage these stresses, anxieties, and depression many will turn to tobacco, alcohol, or fatty “comfort” foods, which further endanger their health. In addition, they are far less likely to trust others or to have a sense of belonging to a community and far more likely to be concerned about maintaining face and pride. As a result, they (and those around them) are far more likely to die or be injured by violent crimes; indeed, societies with high income inequality have especially high rates of death linked to accidents, violence, and alcohol. Importantly, Wilkinson notes that when societies reduce income inequality through increasing education, housing, and employment opportunities (as Japan and Korea did following World War II), all members of the society benefit because lower-class persons become both more economically productive and less likely to engage in criminal or violent behaviors.

The New Rise in Infectious Disease

By the second half of the twentieth century, Americans—both health care workers and the public—had come to believe infectious diseases were under control (even though they continued to rage in poorer regions of the world). Partly because of this belief, few paid much attention when on June 5, 1981, the federal government’s *Morbidity and Mortality Weekly Report* published a brief article describing a curious syndrome of immune-deficiency disorders in five gay men. Within a few years, however, people around the

world would learn to their horror that a deadly new infectious disease, now known as AIDS, had taken root. Since then, other new infectious diseases (such as Ebola virus) have been identified, previously known diseases (such as cholera and streptococcus) have become deadlier, and previously harmless microbes (such as the virus that causes bird flu) have caused important disease outbreaks (Altman, 1994).

The renewed dangers posed by infectious disease partly reflect basic principles of natural selection. Just as natural selection favors animals whose camouflaging coloration hides them from predators so they can survive long enough to reproduce, natural selection favors those germs that can resist drug treatments. As doctors prescribed antibiotics more widely, often under pressure from patients who feel “cheated” if they do not receive a prescription at each visit (Vuckovic and Nichter, 1997), the drugs killed all susceptible variants of disease-causing germs while allowing variants resistant to the drugs to flourish. Similarly, drug-resistant tuberculosis is increasing worldwide, as AIDS and poverty leave individuals both more susceptible to infection and less able to afford consistent, effective treatment. Meanwhile, widespread use of antibiotics in everything from cutting boards to kitty litter, chicken feed, and soaps also encourages the rise of drug-resistant bacteria.

Other forces also promoted the rise in infectious diseases (L. Garrett, 1994). Population growth and the rise of cities had fostered the spread of infectious diseases in Europe centuries ago; these same factors now are causing new epidemics to develop in the rapidly growing cities of Africa, Asia, and Latin America. Meanwhile, older cultural traditions often erode among those who move to these cities, making health-endangering activities like tobacco smoking and sexual experimentation more likely. At the same time, the destruction of ecosystems in these regions, as industrial sites and cities replace forests and farmlands, changes the balance between human, animals, and microbes, encouraging some microbes that previously had infected only animals to begin infecting humans.

All these factors have been heightened by **globalization**, the process through which ideas, resources, people, and trade increasingly operate in a worldwide rather than local framework. The erosion of cultural traditions in Asia, Africa, and Latin America reflects, among other things, the increasingly global spread of Western ideas by tourists, the mass media, businesspeople, and nongovernmental organizations such as the International Monetary Fund (IMF) and the United Nations. Similarly, environmental changes that encourage disease partly stem from actions taken by Western-based industries and corporations, which have found it increasingly easy to operate around the world due to new free trade agreements (such as NAFTA, the North American Free Trade Agreement). Finally, the globalization of business investment and tourism has globalized disease simply by increasing the number of people traveling from one region to another (L. Garrett, 1994). For example, severe acute respiratory syndrome (SARS) is a new, infectious respiratory disease that doctors first identified in China in late 2002. Due to

Box 2.1 ***The Threat of Bioterrorism***
by Sarah St. John

The terrorist attacks of September 11, 2001, the spread of anthrax through the mail shortly thereafter, and the 2005 bombings in Madrid and London busses and subways have heightened concerns about bioterrorism in the United States. Since World War II, numerous governments (including the United States) have developed stockpiles of dangerous germs—including bubonic plague, typhus, smallpox, and anthrax—as well as technologies for making those germs more toxic and easier to disseminate (T. Brown and Fee, 2001; J. Miller, Engelberg, and Broad, 2001). All of us are endangered by the possibility that a government or terrorist group might use these germs. Such an event could produce massive human casualties, severely reduce food or water supplies if animals or water are infected, and cause great disruption (like the disruption to the postal system after the anthrax mailings).

The United States is particularly vulnerable to bioterrorism for several reasons. First, our status as the world's leading superpower makes us a target for those who envy our economic and political power, fear our cultural influence, or resent our actions. Second, our open society and commitment to individual liberties makes it more difficult to protect against terrorists than would be the case if our country were a dictatorship and we lived under constant governmental surveillance. Third, many Americans lack health

insurance, adequate food and housing, and proper immunization against disease, and so are more susceptible to infection and less likely to receive the sort of quick treatment that could stop an epidemic quickly. Fourth, U.S. hospitals lack effective plans for coping with large bioterrorist attacks and lack the vaccinations, treatments, space, equipment, and knowledgeable personnel needed to do so (Daniell, Treser, and Wetter, 2001). Finally, severe cutbacks in the public health system over the last 25 years have weakened both local health departments and the national Centers for Disease Control and Prevention, thus weakening our ability to detect and respond to epidemics (L. Garrett, 2000).

In response to these problems, the U.S. government has dramatically increased its antiterrorism funding. Questions have been raised, however, regarding how much of this money should be devoted to fighting bioterrorism (how great is the risk, and how do we calculate it?) and how such money could best be allocated (to military surveillance? epidemiological surveillance? stockpiling medicines?). However these questions are answered, any monies spent alleviating problems associated with poverty, housing, nutrition, access to health care, and the decaying health care infrastructure will bring benefits whether or not we suffer a serious terrorist attack (Cohen, Gould, and Sidel, 2001).

international travel, within less than a year more than 8,000 cases were reported in 29 countries, including the United States (World Health Organization, 2005a). Globalization also can encourage infectious disease through its political effects. Since September 11, 2001, the American public has realized that the U.S. role in world politics can make it a target for terrorists, some of whom may be willing to use infectious diseases as weapons. Box 2.1 discusses this threat.

Table 2.1 *Modes of Transmission for Adults and Adolescent AIDS Cases Diagnosed 2003, United States*

EXPOSURE CATEGORY	PERCENTAGE OF CASES
Men who have sex with men	35
Injecting drug use	16
Men who have sex with men and inject drugs	4
Heterosexual contact	19
Female-to-female sexual contact	0
Unknown*	25
Total	99**

*Typically, mode of transmission is unknown because the case is still under investigation; the individual refused to answer questions or died before being interviewed; or the mode of transmission, while suspected, could not be proved; about half of all cases initially listed as mode of transmission unknown are eventually reclassified.

**Does not add to 100% due to rounding.

Source: Centers for Disease Control and Prevention (2004a).

The Emergence of AIDS

AIDS provides the premiere example of the new rise in infectious disease. Beginning in 1979, a few doctors in New York, San Francisco, and Los Angeles had noticed small outbreaks in young gay men of rare diseases that typically affect only persons whose immune systems have been damaged by disease or chemotherapy. By 1982, the Centers for Disease Control and Prevention (CDC) had officially coined the term **acquired immunodeficiency syndrome (AIDS)** to describe what we now know is the last, deadly stage of infection with **human immunodeficiency virus (HIV)**. Because most HIV-infected persons do not in fact have AIDS, this textbook uses the term **HIV disease** rather than AIDS except when reporting statistics based solely on AIDS cases.

HIV disease is spread through sexual intercourse; through sharing unclean intravenous needles; through some still-unknown mechanism from mother to fetus; through blood transfusions or blood products; and, rarely, through breastmilk. The last three modes of transmission are now rare in countries where HIV blood tests, breastmilk substitutes, and drugs for reducing the risk of maternal/fetal transmission are affordable. Studies have demonstrated conclusively that AIDS is not spread through insects, spitting, sneezing, hugging, nonsexual touching, or food preparation (Stine, 2005). Table 2.1 shows the modes of transmission for AIDS cases diagnosed in 2003. In 2005, the number of Americans infected with HIV passed 1 million for the first time.

The rapid spread of HIV disease since 1981 reflects public attitudes as much as biological realities. A handful of behavioral changes could have virtually halted its spread: testing the blood supply for infection, using latex condoms and spermicide with sexual partners, and using clean needles when injecting drugs. Unfortunately, throughout the early years of the epidemic when intervention would have been most effective, the U.S. government (like most other governments) treated HIV disease as a distasteful moral issue rather than as a medical emergency. At critical junctures during the 1980s, federal officials lobbied Congress to restrict funding for HIV research and education (Epstein, 1996). Moreover, the limited funds the government provided early on for HIV education came with many strings attached, such as prohibiting explicit pictures in materials on sexual education, prohibiting language that might offend heterosexuals even in educational materials designed solely for gay men, and—even though substantial proportions of teenagers engage in sexual intercourse—refusing to fund education programs for children and young adults unless the programs taught only abstinence from sex and not how to have sex safely.

Similarly, both federal and local authorities have made it exceedingly difficult for individuals to protect themselves from infection by using intravenous needles safely. By retaining laws making it illegal to purchase or own needles and prosecuting those who distribute needles, the government unwittingly encourages addicts to share needles and thus to spread HIV, hepatitis, and other diseases. At the same time, the government has refused funding to those who would teach drug users how to clean needles. Yet most research suggests that helping drug users to protect themselves reduces the incidence of HIV infection without increasing the rate of drug use (Gostin et al., 1997).

The Modern Disease Profile

Despite the recent reemergence of infectious diseases, however, these diseases still play a relatively small role in U.S. mortality rates. Table 2.2 shows the top ten causes of death in the United States in 2002 and illustrates how these causes have changed since 1900.

As the table demonstrates, whereas the top killers in 1900—influenza, pneumonia, and tuberculosis—were infectious diseases, the top killers currently—heart disease and cancer—are chronic diseases primarily associated with middle-aged and older populations. These diseases now far outpace infectious diseases as causes of death.

But infectious diseases have not disappeared from the list of leading causes of death. Influenza and pneumonia remain significant for the population as a whole, while AIDS remains a leading cause of death among persons ages 25 to 44, with rates especially high among African Americans (National Center for Health Statistics, 2004). The newest drugs for treating HIV disease (the protease inhibitors) do seem to increase life expectancy, but only for those who can tolerate the drugs' side effects, manage the

Table 2.2 *Main Causes of Deaths, 1900 and 2002*

1900	RATE/100,000	2002	RATE/100,000
Influenza and pneumonia	202	Heart disease	240.8
Tuberculosis	194	Cancer	193.5
Gastritis	143	Cerebrovascular disease	56.2
Disease of the heart	137	Chronic pulmonary disease	43.5
Cerebrovascular diseases	107	Accidents	36.9
Chronic kidney disease	81	Diabetes	25.4
Accidents	72	Influenza and pneumonia	22.6
Cancer	64	Alzheimer's	20.4
Diseases of early infancy	63	Kidney disease	14.2
Diphtheria	40	Septicemia	11.7

Source: M. Greenberg (1987: 5); Kochanek et al. (2005).

required regimen of as many as twenty pills per day taken at strictly regulated times, and afford the cost of about \$15,000 per year.

Finally, Table 2.2 shows the continued role social factors play in causing deaths. Accidental deaths mostly stem from motor vehicle accidents (many of them linked to alcohol use), while tobacco use is the main cause of chronic pulmonary disease and a common contributor to heart disease, cancer, and cerebrovascular disease (strokes). Each of these causes of death reflects social behaviors rooted in social conditions. The remainder of this chapter discusses the role social forces play in mortality and morbidity.

The Social Sources of Premature Deaths

In a widely cited article titled "A Case for Refocusing Upstream," sociologist John McKinlay (1994) offers the following oft-told tale as a metaphor for the modern doctor's dilemma:

Sometimes it feels like this. There I am standing by the shore of a swiftly flowing river and I hear the cry of a drowning man. So I jump into the river, put my arms around him, pull him to shore and apply artificial respiration. Just when he begins to breathe, there is another cry for help. So I jump into the river, reach him, pull him to shore, apply artificial respiration, and then just as he begins to breathe, another cry for help. So back in the river again, reaching, pulling, applying, breathing, and then another yell. Again and again, without end, goes the

sequence. You know, I am so busy jumping in, pulling them to shore, applying artificial respiration, that I have *no* time to see who the hell is upstream pushing them all in. (McKinlay, 1994: 509–510)

This story illustrates the traditional emphasis within medicine on **tertiary prevention**: strategies designed to minimize physical deterioration and complications among those already ill. Tertiary prevention includes such tactics as providing kidney dialysis to persons whose kidneys no longer function or insulin to those who have diabetes. Doctors much less commonly focus on **secondary prevention**: strategies designed to reduce the prevalence of disease through early detection and prompt intervention. Examples of secondary prevention include screening patients for cervical cancer or glaucoma so these diseases can be detected at still-treatable stages. Those who focus on secondary prevention typically work in public health or in the **primary practice** fields (family practice, pediatrics, or internal medicine). Finally, only a small fraction of doctors, usually in public health—or, less commonly, primary practice—focus “upstream” on **primary prevention**: strategies designed to keep people from becoming ill or disabled, such as discouraging drunk driving, lobbying for stricter highway safety regulations, and promoting vaccination.

Even when doctors and researchers (or, for that matter, the public) have focused on primary prevention, they typically have looked only far enough upstream to see how individual psychological or biological characteristics make some people more susceptible than others to disease or unhealthy behaviors. For example, an increasing number of medical researchers now focus on the genetic roots of disease, such as a possible gene for alcoholism. Similarly, many psychologists focus on understanding the psychodynamic forces that lead individuals to adopt behaviors believed to prevent illness, such as exercising regularly or refraining from smoking. The popular media, meanwhile, usually focuses on how individual “lifestyle choices” such as dieting, smoking, or using a seat belt affect the likelihood of health or illness.

Sociologists agree that biological factors and psychological predispositions affect decisions about whether to adopt healthier behaviors. But sociologists also note that these decisions do not occur in a vacuum. Rather, they occur in particular economic, cultural, and political settings that can make healthy behaviors or health itself either more or less possible. For example, adolescents’ decisions regarding whether to drink alcohol are affected significantly by the attitudes of their friends, family, and culture in general. Similarly, the high rates of diabetes found among contemporary Native Americans partially reflect individual patterns of exercise and diet. They also, however, reflect the effects of the reservation system, with its sedentary lifestyle, ready access to fatty and sugary foods, limited access to fresh fruits and vegetables, and limited prospects for employment that make purchasing healthier foods difficult. In both cases, to blame unhealthy behavior patterns on individual choices seems oversimplistic.

Table 2.3 *Estimates of Actual Causes of Premature Death in the United States, 2000*

CAUSE	NUMBER	PERCENTAGE OF ALL DEATHS
Tobacco	435,000	18
Diet/activity patterns ^a	100–400,000	17
Medical errors ^b	>100,000	>13
Alcohol	85,000	4
Bacteria and viruses ^c	75,000	3
Toxic agents	55,000	2
Motor vehicles ^d	43,000	2
Firearms	29,000	1
Sexual behavior	20,000	1
Illicit use of drugs	17,000	1

^aEstimates vary.

^bNumber of deaths is a rough estimate, because different studies have looked at different locations (in-hospital versus out-of-hospital) and different types of errors (surgical, medical, pharmacological).

^cDoes not include deaths related to HIV, tobacco, alcohol, illicit drugs, or infections caused by nonmicrobial diseases.

^dIncludes motor vehicle accidents linked to drug use, but *not* to alcohol use.

Source: Mokdad et al., 2004; HealthGrades, 2004; Kohn, Corrigan and Donaldson, 1999.

As these examples suggest, truly refocusing upstream requires us to look beyond individual behavior or characteristics to what McKinlay refers to as the **manufacturers of illness**: those groups that promote illness-causing behaviors and social conditions. These groups include alcohol distributors, auto manufacturers that fight against vehicle safety standards, and politicians who vote to subsidize tobacco production.

An article by Ali Mokdad and his colleagues (2004) published in the *Journal of the American Medical Association* provides a useful starting point for refocusing upstream. The article synthesizes the available literature on the major underlying causes of premature deaths (that is, deaths caused neither by old age nor by genetic disease) to identify those causes that we could most readily reduce or eliminate through social or medical interventions.

Mokdad and his colleagues identify nine causes that, they believe, together account for almost half of all premature deaths in the United States. Table 2.3 shows these causes and their prevalences (listed not by disease, but by the factors that cause disease) as well as a tenth cause that other researchers have identified. The next sections look at these ten causes of illness, focusing not on the individual behavior patterns that the authors

emphasize in their article, but on the manufacturers of illness that precede these individual behaviors.

Tobacco

As Table 2.3 shows, tobacco causes far more premature deaths in the United States than does any other legal or illegal drug. Whether smoked, chewed, or used as snuff, tobacco can cause an enormous range of disabling and fatal diseases, including heart disease, strokes, emphysema, and numerous cancers (World Health Organization, 1998a). About half of all smokers will die because of their tobacco use, with half of these dying in middle age and losing an average of 22 years from their normal life expectancy. Tobacco use also increases morbidity and mortality among “passive smokers,” those who must live and work around smokers (World Health Organization, 1998a). Similarly, both active and passive smoking can cause birth defects and infant mortality. Unfortunately, quitting smoking is difficult, for nicotine (the active ingredient in tobacco) is more addictive than heroin (Weil and Rosen, 1998).

Given nicotine’s addictiveness, it is easy to understand why individuals continue smoking once they have started. But why do individuals begin smoking in the first place, especially when many initially find tobacco vile tasting and even nauseating? To answer this question, we need to look at the role of tobacco in American culture and at how tobacco manufacturers have created that role.

Since the 1960s, when research first proved the link between smoking and lung cancer, tobacco manufacturers have labored to convince the public through advertising to associate tobacco with positive attributes and achievements rather than with death and disability. This advertising has especially targeted youths, women, and minorities. According to an article published in the *American Journal of Public Health*,

Young people are able to name and recognize cigarette ads and can also match cigarette brand name with cigarette slogans. More than half of current adolescent smokers and approximately one quarter of nonsmoking teens own cigarette promotional items and participate in these campaigns. . . . Longitudinal studies of advertising patterns and young people’s tobacco use demonstrate a positive association between advertising and teenage smoking. In addition, the vast majority of adolescent smokers prefer the most heavily advertised brands (Schooler, Feighery, and Flora, 1996)

Manufacturers also have targeted their marketing to women by playing on women’s desire for equality, excitement, personal fulfillment, and weight loss (a cultural imperative for women in contemporary American culture and a major reason women smoke). This strategy was exemplified by Virginia Slims—the name was not accidental—and its slogan, “You’ve come a long way, baby.” To target minorities, manufacturers advertise heavily in

magazines such as *Ebony* and *Jet*. Manufacturers also have gained influence and visibility in minority communities by providing financial sponsorship for charitable and cultural organizations and events and by geographically targeting minority communities with “culturally appropriate” advertising (White, 1988).

Over the last decade, successful legal attacks on tobacco manufacturers and advertisers have begun to erode their ability to attract new customers. For example, tobacco companies can no longer use cartoon characters in advertisements and now must limit their sponsorship of sports and entertainment events. Smoking by both teenagers and adults has declined slowly but steadily since the late 1990s, and the American public is showing growing support for the idea of “smoke-free” areas and a smoke-free culture (Givel and Glantz, 2004; National Center for Health Statistics, 2004: 33).

Diet, Exercise, and Obesity

The second most common cause of premature deaths, according to Mokdad and his colleagues (2004), is a high-fat diet, sedentary lifestyle, and resulting obesity, which the authors argue increases the odds of developing cardiovascular disease, strokes, certain cancers (of the colon, breast, and prostate), and diabetes, among other problems.

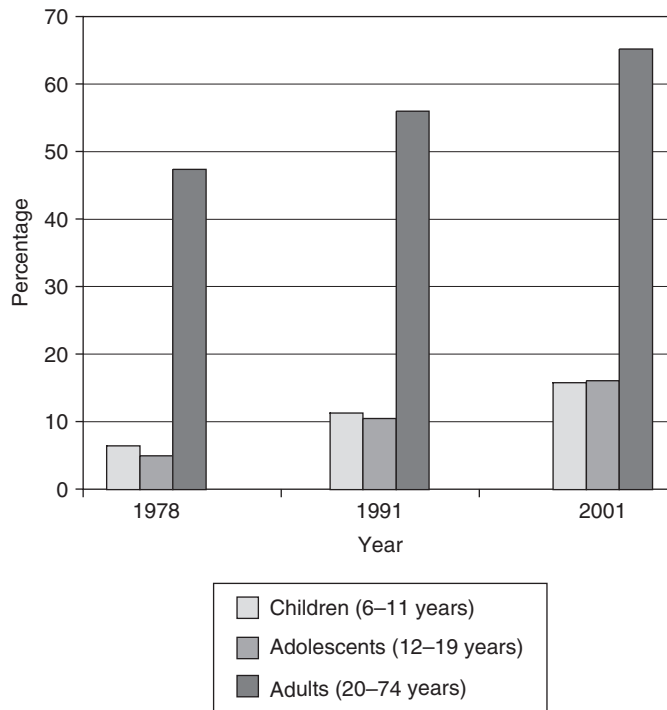
The Obesity Myth?

Since 1978, and as Figure 2.2 shows, rates of overweight and obesity in the United States have skyrocketed (Centers for Disease Control and Prevention, 2005). These changes have led the Centers for Disease Control and the Department of Health and Human Services to declare obesity a top national priority.

Without question, life is more difficult for those who are overweight. In contemporary America, overweight persons are not only considered less attractive but also assumed to be less intelligent, less responsible, and even less moral than others. Heavier persons—especially if they are female—are less likely to get dates, job promotions, marriage proposals, and so on. Physically, too, above a certain weight life becomes more difficult. Chairs and clothes don’t fit, exercise becomes less fun, and finding the energy for life’s daily tasks and pleasures becomes more difficult. Moreover, individuals who are obese, rather than just overweight, are more likely to develop heart conditions, diabetes, sleep difficulties, and other problems that diminish their quality of life, whether or not those problems shorten their life spans (Centers for Disease Control and Prevention, 2005).

Despite all this, however, there is good reason to believe that the dangers of being overweight have been overstated (Campos, 2004; Flegal et al., 2005; Gibbs, 2005). In 2005, the Centers for Disease Control reduced their estimate of yearly mortality due to obesity from 360,000 to 112,000 deaths per year (which still leaves it the second highest cause of premature deaths).

Figure 2.2 **Percentage of Americans Who Are Overweight or Obese**



Source: National Center for Health Statistics, 2004.

This new estimate came from an article, published by Katherine Flegal and her colleagues (2005) in the *Journal of the American Medical Association*, that combined data from five national **random samples** conducted over a 30 year period by federal government researchers (rather than by researchers funded by the diet industry). Not only did the authors find that previous researchers had substantially overestimated the dangers of obesity, they also found that being overweight actually *reduces* death rates in most cases. The highest death rates overall occurred among those who were obese (e.g., 5'6" and more than 180 pounds), but the second highest death rates occurred among those who were *underweight* (e.g., 5'6" and less than 112 pounds). Moreover, above age 60, and among nonsmokers (regardless of age), underweight persons had the *highest* death rate.

Why have studies disagreed so dramatically about the impact of weight on mortality? Earlier studies were based on narrow populations (such as middle-aged nurses), relied on self-reported weights and heights, **controlled** statistically for few variables, and may not reflect current conditions. In addition, earlier studies compared obese Americans to normal-weight Americans,

whereas Flegal and her colleagues explored the full range of weights (including underweight and overweight persons who were not obese.) Finally, the diet industry funded almost all of the earlier research, which may have colored study findings (Campos, 2004).

In addition, some argue that the real issue is not obesity, but physical activity and fitness (Blair and Church, 2004). Reviews of the available research indicate that individuals who are obese but physically fit have half the death rate of individuals who are normal weight but *unfit*. Moreover, research consistently suggests that significant, sustained weight loss is nearly impossible; but that 150 minutes a week of moderate physical activity is sufficient to substantially reduce a person's health risks (Blair and Church, 2004; Kolata, 2004a). Consequently, from a health perspective it seems more important and realistic to encourage Americans to exercise rather than to diet.

Despite these debates about the consequences of being overweight, scientists agree that Americans would be fitter, feel healthier, and perhaps live longer if they increased their activity levels; reduced consumption of fats, sugars, salt, and meat; and increased consumption of fruits, vegetables, and whole grains. Such changes would most benefit poor Americans, who are more likely than others are to eat unbalanced diets, heavy in sugars and fats, because such diets provide energy and satisfy hunger most cheaply (James et al., 1997).

"Supersizing" Americans

Why have Americans gained so much weight over the last generation? To answer this question, we need to look at how biology, economics, and politics combine (Crisler, 2003).

Biologically, humans have a natural craving for sweet and fatty foods and a natural desire to seek food of all sorts for survival. In past generations, when food was scarce, these cravings were healthy. Now, though, most Americans have plentiful access to food and eat more calories than their bodies can use, leading in the long run to overweight or obesity. In addition, the rapid adoption by food manufacturers of high-fructose corn syrup (an inexpensive sweetener) and palm oil (an inexpensive fat) also led to rapid weight gains, for the former is metabolized by the body differently than are other sugars, and the latter is a more saturated fat than even pig lard (Crisler, 2003).

To these changes in *what* Americans eat were added changes in *how much* Americans eat. Longer work weeks, lowered costs for eating out, and the increase in two-earner and single-parent families have led Americans to eat out more than ever before: Whereas in 1970 Americans spent 25 percent of their food budget eating out, by 1996 they spent 40 percent of their food budget eating out (Crisler, 2003: 32). Yet restaurant foods typically include far more fat and sugar than do homemade meals. Moreover, restaurants typically offer a wider variety of foods at any given meal, on appetizer plates, buffet tables, and in packaged "value meals." In addition, since the 1970s, restaurants have increasingly "supersized" portions as a way to increase sales

and profits. Unfortunately, few individuals can regulate themselves when presented with large portions of varied foods, and so both these trends increased calorie consumption. As a result, the rise in eating away from home has increased Americans' calorie consumption by an average of 1,400 calories per person per week (Crisler, 2003: 33). Eating at fast-food restaurants is particularly problematic. For example, teenage boys who eat at fast-food restaurants three or more times a week consume 800 more calories *per day* than do those who eschew fast food (French et al., 2001).

Food manufacturers and the fast-food industry have used advertising to reinforce the tendency toward eating a sweet, fatty, high-calorie diet. Because manufacturers earn far less money by selling healthy foods (like fruits, vegetables, and grains) than by selling highly refined products loaded with fat, sugar, and salt (like candy, soft drinks, and convenience foods), they spend more than thirty times as much to advertise the latter foods (Nestlé, 2002: 22). That advertising has grown increasingly insidious, and now pervades every sphere of our society—especially those where children can be found. Soft-drink companies, for example, advertise to children not only on television, in magazines, and on the Internet but also through such tactics as offering toys and clothing with brand logos, placing products in movies, sponsoring school sports teams, providing soda-vending machines to schools, and offering cash bonuses to schools based on how much soda their students purchase. Many schools have felt helpless against this onslaught, because signing deals with soda companies seems the only way they can replace funds lost to budget cuts and to meeting mandates to prepare students for the new, required high-stakes tests. Consumption of sugar-sweetened soft drinks is directly and substantially related to obesity and diabetes among both adults and children (Apovian, 2004).

Meanwhile, as caloric consumption has increased, physical exercise has decreased. School budget cuts and intense political pressure to focus on test scores have led many schools to drop physical education and even recess. Almost half of all U.S. high school students no longer have any physical education classes (Gerberding and Marks, 2004). And at home, few children these days are allowed to spend their afternoons running free or playing non-organized sports. Instead, poor children are admonished to stay indoors to stay safe, and more-affluent children are shepherded from tutors, to classes, to the occasional sports activity. At the same time, physical activity is now an everyday part of life for only a small minority of children or adults, because very few commute by foot or bicycle to work, play, or shopping.

Medical Errors

According to a report released by the federal Institute of Medicine in 2000 (Kohn, Corrigan, and Donaldson, 1999), between 44,000 and 98,000 Americans die each year because of preventable medical errors in hospitals, and at least as many die from errors outside of hospitals. Subsequent research has

suggested that these numbers greatly underestimate the problem (HealthGrades, 2004; Leape and Berwick, 2005). Medical errors cause more preventable deaths than do any factors other than tobacco use, and possibly unhealthy diet and activity patterns, and they cost the nation approximately \$17 billion per year. Examples include conducting surgery on the wrong patient, giving a patient two drugs that interact dangerously, or misdiagnosing and hence mistreating a patient.

When errors occur, it is natural to focus on identifying which individual is to blame. Yet in most cases errors occur even though health care workers are dedicated, intelligent, and well trained. Consequently, most researchers and public health workers argue that we should focus not on individual malfeasance but rather on problematic systems. For example, many hospitals stock certain drugs only at full strength, even though the drugs are potentially fatal at full strength and must be diluted before use. Stocking these drugs pre-diluted would eliminate this source of death much more effectively than trying to identify every doctor or nurse who might administer the wrong dosage. Similarly, doctors can easily order the wrong drug when very different drugs have very similar names. The consequences can be fatal: A person experiencing epileptic seizures, for example, who receives the antifungal drug Lamisil instead of the antiepileptic Lamictal can die when his seizures continue unabated. In these examples, preventable deaths occur only when human error combines with systems that do not stop and that may even facilitate the error.

Adding to these problems is the lack of a system for identifying when deaths have been caused by medical errors. During the 1950s and 1960s, hospitals routinely autopsied from 50 to 70 percent of all patients who died. Now, due to a combination of economic costs and fear that autopsies will identify errors and result in malpractice claims, hospitals autopsy fewer than 10 percent, thus virtually eliminating one of medicine's most basic tools for identifying and reducing medical error (Lundberg, 2001: 253).

Medical culture, too, makes it difficult to identify and respond to medical errors. Research consistently finds that doctors rarely focus on identifying such errors, even in hospital's routine Mortality and Morbidity Conferences, whose purpose is to help doctors understand why patients have died or worsened unexpectedly (Bosk, 2003; Freidson, 1975; Millman, 1976; Orlander and Fincke, 2003; Pierluissi et al., 2003). First, cases typically are selected for discussion at conferences because they illustrate interesting intellectual puzzles rather than preventable medical errors. Second, medical errors rarely are identified as such. Third, when medical errors *are* identified, discussion rarely focuses on how to avoid such errors in future. Instead, because of professional etiquette, the need to maintain good relations with colleagues, and a medical culture that values individual doctors' right to make their own decisions, most errors are labeled unavoidable or blamed on nonmedical staff or on doctors from other divisions who are not invited to the discussions (Pierluissi et al., 2003).

Despite all these problems, the Institute of Medicine's report seems to have had some significant effects (Leape and Berwick, 2005). Most important, there is now widespread agreement among doctors, insurers, researchers, the public, and the government that medical error is a problem, and there is growing agreement that the problem needs to be dealt with systemically. The federal government has significantly increased its funding for research on patient safety, and hospitals across the country have adopted various systemic changes. For example, Veterans Administration (VA) hospitals now use a computerized record system that gives nurses and doctors access to comprehensive information on their patients. In addition, the record system generates bar-coded strips that are attached to each nurse, patient, and medication. Before administering any medication, a nurse must scan his or her own bar code as well as those of the patient and medication into a computer. The computer then checks that the nurse has the right drug for the right patient, and that the drug will not interact dangerously with any other drug taken by that patient. Since adopting this system, VA hospitals report that medication errors have dropped 70 percent (Leape and Berwick, 2005). In 2005, the government announced that it would make this record system available at no cost to all U.S. doctors who treat patients under **Medicare**, the federally funded insurance program for the elderly and permanently disabled.

Alcohol

Like tobacco, alcohol kills far more people than do all illegal drugs combined. Heavy alcohol use can cause irreversible brain damage, hepatitis, heart disease, cirrhosis of the liver, and cancers of the digestive system, while reducing the body's ability to fight infections such as tuberculosis and pneumonia. In addition, by diminishing individuals' ability to make rational choices, alcohol use contributes to deaths from drownings, fires, violence, and accidents and increases the odds of engaging in unsafe sexual behavior. Finally, withdrawal from alcohol is more dangerous than withdrawal from any other legal or illegal drug and can cause brain damage, heart failure, or stroke. Yet despite the dangers of alcohol, by law the U.S. Office of National Drug Control Policy cannot use any of its funds (\$507 million during 2004–2006) to fight problem drinking. Proposals to change this statute, supported by the American Medical Association and the American Public Health Association, have been fiercely and successfully resisted by alcohol manufacturers and distributors (Wren, 1999).

To ensure that the government continues to treat alcohol as a beverage rather than a drug, alcohol manufacturers contribute heavily to political campaigns, giving \$11 million to federal candidates alone during the 2004 election cycle (Center for Responsive Politics, 2005). Manufacturers also have worked to define the individual drinker rather than alcohol itself as the problem by promoting the idea that alcoholism is a disease that affects only

susceptible individuals; by funding research on biological roots of alcoholism; and, like tobacco manufacturers, by supporting laws that criminalize underage drinking while fighting laws that would criminalize the sale of alcohol to minors (Morgan, 1988; Mosher, 1995).

At the same time, alcohol manufacturers have worked diligently to sell alcohol to the public not as a drug but as a lifestyle. Much of this marketing either directly or indirectly targets youths, despite voluntary industry codes that forbid manufacturers from marketing alcohol to audiences in which a majority are under age 21. During 1997–1998, only four of eight manufacturers studied by the Federal Trade Commission (1999) met even this lenient standard, and manufacturers paid to have their products appear on eight of the fifteen television shows most popular with teenagers. In addition, in recent years alcohol manufacturers have increased sales to youths by developing “alcopops”: extra-sweet, fruit-flavored alcoholic beverages like Hard Lemonade, Smirnoff Ice, and Skyy Blue. Advertisements for these and other alcoholic beverages typically associate alcohol with adulthood, sexual adventure, status, freedom, excitement, and pleasure. Meanwhile, alcohol also sells because it offers an effective, if self-destructive, way to dull the emotional pains of daily life and the physical pains of hunger, cold, or abuse.

Bacteria and Viruses

Bacteria and viruses surround us all the time. Yet only rarely do individuals become infected, and even more rarely do these infections lead to deaths. Under what conditions do these deaths occur?

First, individuals will not develop fatal diseases if they are vaccinated against them. Virtually all U.S. children are vaccinated before they begin school, but about one-quarter do not receive all the required vaccinations by the recommended ages (National Center for Health Statistics, 2004: Table 72).

Second, even in the absence of vaccinations, individuals exposed to germs may not become infected unless they already are physically weakened. For example, a significant percentage of all persons admitted to hospitals—a population that obviously is already physically vulnerable—develop infections (some of which are life-threatening) while in the hospitals. Similarly, individuals are far more susceptible to infection if age, malnutrition, poor housing, insufficient clothing, or other difficulties weaken their bodies. This explains why American tourists rarely contract tropical diseases even when traveling in countries where disease is endemic and even when they are neither vaccinated nor taking prophylactic drugs.

Third, the same factors that leave some susceptible to infection help explain why, among those who do become infected with a given disease, some will die but others will experience only minor health problems. Measles, for example, is a minor childhood disease in the United States but a major killer in poorer countries (as Chapter 4 will describe).

Fourth, among those who become ill, death or long-term disability may not occur if individuals have ready access to good health care. For example, doctors can cure most bacterial infections in otherwise healthy individuals, and simply providing intravenous nutrition and fluids can save the lives of many infants suffering from life-threatening diarrhea.

Toxic Agents

Mokdad and his colleagues (2004) trace 2 percent of premature deaths to toxic agents. These agents can be divided into occupational hazards and environmental pollutants. In “light” industries like electronics, workers are often exposed to a wide variety of potentially toxic solvents, such as trichloroethylene (TCE), and in traditional industries such as mining and construction, welders often face substantially increased risks of lung cancer caused by toxic levels of chromium and nickel. Similarly, agricultural workers, as described in the next chapter, often are regularly exposed to dangerous pesticides.

Unlike occupational hazards, environmental pollution poses the greatest dangers to children because of their still-growing bodies and immune systems, the time they spend playing outdoors, and their tendency to play on the ground and put things in their mouths. Many forms of environmental pollution threaten children (U.S. Environmental Protection Agency, 1996). For example, about 900,000 U.S. children under age 6 have elevated levels of lead in their blood from eating old house paint, which can cause retardation, learning disabilities, hearing deficiencies, hyperactivity, and other problems. Each year, 24,000 children are poisoned by eating pesticides; and many more children are exposed to pesticides at lower but still unsafe levels. Similarly, 33 percent of U.S. children now live in areas that do not meet national air quality standards, which partly explains why 4.8 million children have asthma. Finally, 10 million children under the age of 12 live within four miles of a toxic waste dump, thus increasing their risks of cancer and genetic defects (U.S. Environmental Protection Agency, 1996).

In the long run, the greatest environmental health threat may be global warming. During the last quarter century, carbon dioxide and synthetic gases, especially chlorofluorocarbons (CFCs) such as Freon, have mushroomed. According to the Intergovernmental Panel on Climate Change, a joint venture of the World Meteorological Organization and the United Nations Environment Programme (Houghton et al., 1996), these chemical by-products of industrial manufacturing have damaged the ozone level surrounding the planet and caused temperatures to rise around the globe. Debate continues about the consequences of global warming, but many scientists suspect that global warming and the resulting damage to the ozone level will foster genetic mutations, cancers (especially skin cancer), and smog-related health problems such as bronchitis, asthma, and emphysema.

Motor Vehicles

Mokdad and his colleagues (2004) attribute 2 percent of all premature deaths to motor vehicle accidents (including accidents involving drug use but not alcohol use). These deaths are not a necessary by-product of modern life. Rather, they reflect in part a series of decisions regarding the design of automobiles and transportation systems.

Changes in car design can dramatically reduce the chances that an accident will cause death or serious injury. The rate of deaths from motor vehicle accidents has declined substantially since 1966, when Congress established the National Highway Traffic Safety Administration (NHTSA) to regulate motor vehicle design and oversee highway safety programs. NHTSA was founded in response to the public outcry that followed publication of Ralph Nader's book *Unsafe at Any Speed* (1965), which documented how automobile manufacturers for years had ignored evidence of automobile safety hazards that could have been eliminated for a few dollars per car.

Automobile manufacturers have continued to fight against inexpensive improvements that could save thousands of lives yearly, such as strengthening bumpers and side doors to resist impact, covering instrument panels and roof interiors with softer materials to protect against head injuries, and redesigning gas tanks to reduce the likelihood of explosions during crashes. Equally important, legislators and government regulators have continued to exempt vans, multipurpose vehicles, and light trucks—which now account for more than 50 percent of all noncommercial vehicle sales—from passenger car safety regulations, even though most consumers use these vehicles as family cars.

One way, then, to reduce the rate of deaths and disability caused by cars is through simple changes in car design. Another way is to get people out of cars. The most basic reason for the higher rate of motor vehicle accidents in the United States as compared to other Western nations is that U.S. residents drive far more miles per year. Although the size of the United States partially explains this difference, Americans also drive so much because they lack other options. Through a series of local and federal decisions, public transportation in this country has declined significantly since its apex in the 1920s (Yago, 1984). Trains and railroad tracks have decayed while federal dollars have subsidized highway construction and motor vehicle production. Long-distance bus systems run for profit have eliminated money-losing connections to many smaller communities. Meanwhile, cities spend billions for parking facilities, road construction, and road maintenance but offer bus service only to limited locations, during limited hours, on a limited schedule. Consequently, whereas a French citizen can use publicly subsidized trains or buses to go to any town or city in France on any given day and probably at several different times, an American citizen often has no way to go by public transportation from one town to the next. Phoenix, Arizona, for example, is the sixth largest city in the United States but has no passenger-rail service.

Nevertheless, despite these problems, the rate of motor vehicle deaths declined by almost 10 percent from 1990 to 2000. Mokdad and colleagues attribute this decrease to greater enforcement coupled with public education campaigns against drunk driving (Mokdad et al., 2004).

Firearms

According to Mokdad and his colleagues (2004), firearms account for 1 percent of all premature deaths in the United States: 16,586 suicides, 10,801 homicides, 776 accidental deaths, and 270 deaths by police. Death from firearms is very much a U.S. phenomenon. Among young males, the rate of firearm deaths is from 12 to 273 times higher in the United States than in other industrialized nations (Kellerman et al., 1993). No other country has nearly as many privately owned firearms and, not coincidentally, no other country has nearly as many firearm-related homicides; studies have found that having a gun in the home significantly increases the odds of suicide, of homicide, and of unintentional shooting deaths of children (Kellerman et al., 1993).

Those who support firearm ownership typically argue that having a gun protects individuals against attacks by criminals. Yet guns are far more often used against family members than against criminals. Furthermore, *even when a home is forcibly entered or a victim attempts to resist*, owning a gun increases the chances of being killed (Kellerman et al., 1993).

Although interest in gun control rose sharply following the 1999 massacre of twelve students and a teacher at Littleton Colorado's Columbine High School and later similar events, this interest has not translated into widespread legislative changes. Those favoring gun control face heavy financial odds, for the "gun rights" lobby routinely donates about ten times more to federal candidates than does the "gun control" lobby (Center for Responsive Politics, 2005.) Nevertheless, firearm-related violence has decreased since 1993, at least partly because of new restrictions on the sale of guns (Wintemute, 1999). Box 2.2 describes some innovative methods doctors are currently using to curb gun violence.

Sexual Behavior

Mokdad and his colleagues (2004) attribute 1 percent of premature deaths to sexual behavior, primarily via hepatitis B, HIV disease, and cervical cancer. (Although the precise mechanisms causing cervical cancer are unknown, it occurs most often among those who have multiple sexual partners and do not use condoms, diaphragms, or spermicides.) Mokdad and his colleagues also include in this category infant mortality following unplanned and unwanted pregnancies, a situation occurring most commonly among teenagers and poor women.

No "manufacturer of illness" benefits from convincing people to engage in sexual activity without protecting themselves against disease or pregnancy. However, social conditions can encourage such behavior. First, those forced by economic necessity to turn to prostitution to support themselves, whether

Box 2.2 *Making a Difference: Physicians for Social Responsibility*

In 1961, a group of doctors concerned about the threat nuclear arms posed to human health and life founded Physicians for Social Responsibility (PSR). With the decline of the Cold War, PSR members have shifted their focus to working, as health professionals, toward ending other forms of violence and encouraging nonviolent means of conflict resolution. Doctors around the country belong to PSR, which has chapters at many medical schools.

In the last few years, PSR members and chapters have begun numerous grassroots efforts aimed at educating both health care professionals and the public about the dangers of handgun violence. The organization does not lobby to ban gun ownership but has supported laws that would keep guns away from children, dangerous individuals, and irresponsible owners. In addition, PSR supports actions designed to stigmatize violent gun use in the same way that drunk driving and tobacco smoking have become increasingly stigmatized in recent years. For example, student members at the University of California—Irvine recently sponsored a “die-in” to raise

awareness of gun violence. The die-in was staged in a busy campus location, where many students were gathered for lunch, and took place to the sound of gunfire booming from loudspeakers. Die-in organizers used the event to distribute information and materials on the dangers of gun violence. Similarly, if less vividly, students at the University of Vermont Medical School sponsored a widely publicized program in which medical students gave teddy bears to everyone who turned in a gun. Students used the exchange as a forum for raising public awareness about guns and featured a contest in which children won prizes for drawing posters about the dangers of guns. Finally, the Seattle PSR chapter, together with the Washington State Medical Association, the King County Prosecutor’s Office, and the Seattle Police Department, has created a program called “Options, Choices, and Consequences,” in which a physician-presenter visits school classes and describes what really happens when someone is shot, highlighting the differences between that reality and what children usually see on television.

male or female, often find that they cannot suggest safer sex to clients without either losing business or risking violence. Similarly, those whose intimate relationships are not based on mutual respect and equality sometimes find that suggesting safer sex to their romantic partners results in violence or abandonment (Wingood and DiClemente, 1997). Finally, those who have learned to have little hope for the future—a sentiment particularly common among youths in communities wracked by racism and poverty—sometimes feel they have little to lose by engaging in unsafe sexual activity (Plotnick, 1992).

Other sexually active individuals, however, do fear both sexually transmitted diseases and pregnancy. For these individuals, sexual activity does not need to lead to disease or pregnancy if they have knowledge about safer sexual practices and access to birth control and abortion. Knowledge about safer sex is now widespread, but access to birth control and abortion has declined over the last decade. Cuts in public funding for contraceptive services have limited options for precisely those groups—teenagers and low-income women—most at risk for unplanned pregnancies and infant mortality. Similarly, the federal government will not pay for abortions for women on **Medicaid** (the

Box 2.3 ***Ethical Debate: Drug Testing in Schools and Workplaces***

Since 1986, the federal government has required all federal job applicants, as well as randomly selected federal employees who hold “safety sensitive” positions, to take urine or blood tests to detect illegal drug use. In addition, many businesses use blood or urine tests to identify job applicants or current employees who use illegal drugs (DeCew, 1994). Many schools require students to test negative for illegal drugs, and sometimes for alcohol and tobacco, before they can participate in extracurricular activities like sports, chess clubs, and language clubs (Steinberg, 1999).

To date, U.S. courts generally have found that use of drug tests by government agencies breaches the Fourth Amendment right to privacy, unless necessary to protect public safety or unless other evidence suggests that a particular individual used drugs. Courts generally have placed no restrictions on private employers’ use of drug tests and have permitted schools to require drug tests for extracurricular activities but not for academic courses.

At first glance, the benefits of drug testing seem obvious. Students, employees, and potential employees who know they will be tested may either cease using drugs or never begin doing so, thereby reducing the overall level of drug use in

society. In addition, reducing drug use may reduce rates of both accidents and violence. Moreover, from a strictly financial perspective, reducing drug use may reduce absenteeism, tardiness, and insurance costs, while improving student and worker performance.

But drug testing comes with a price. Those opposed to drug testing argue that testing inherently invades privacy because it involves taking urine or blood from an individual’s body. Moreover, the only way to ensure a urine sample comes from a specific individual is to watch that individual urinate—an obvious invasion of Western norms of privacy. In addition, drug testing constitutes an invasion of privacy because it can reveal much more than just illegal drug use. For example, the same tests that identify use of illegal drugs can identify legal use of drugs to control epilepsy, manic depression, or schizophrenia. Individuals identified in this way may experience not only social embarrassment but also discrimination and even loss of employment. Finally, drug testing invades privacy because it measures not only what a person does in school or on the job but also what she does during her free time. An individual who uses drugs only in the evenings or on weekends may test positive for drugs at school

government-funded health insurance program for poor persons) unless the woman’s life is endangered. Studies have found that between 20 and 37 percent of women who would have had an abortion if Medicaid paid for it instead carry to term (Boonstra and Sonfield, 2000). Meanwhile, cutbacks in government funding for abortions and harassment and violence against abortion providers have reduced the number and geographic distribution of abortion providers. So, too, has the fact that only a small fraction of medical schools teach abortion, which is the only medical procedure that doctors can opt not to learn. As of 2000, thirty-four percent of women ages 15 to 44 lived in counties without any abortion provider (Henshaw and Finer, 2003). Other restrictions, such as requiring waiting periods or parental consent, also cause limited access to abortion, especially for poor and young women. Yet despite these restrictions, abortion remains common: An estimated one-third of all

or work even though the drugs no longer can affect his performance.

In addition, those who oppose drug testing in the workplace also question why, if the purpose of testing is to identify workers whose performance is impaired, we measure drug use rather than job performance. After all, some individuals who use drugs nevertheless will perform adequately while others who do not use drugs will perform poorly. Moreover, most drug-related impairment in the workplace stems from use of alcohol, yet employers usually test only for use of illegal drugs.

Finally, opponents of drug testing argue that the potential benefits of testing are far outweighed by the potential for harm when individuals are falsely labeled as drug users. As many as 40 percent of those identified as drug users by urine tests have not actually used illegal drugs. Urine tests can confuse decongestants with amphetamines, ibuprofen (Advil) with marijuana, cough syrup with morphine, and herbal teas with cocaine. The proportion of false positives is considerably lower when blood rather than urine tests are used, but the latter are more often used because they are cheaper and quicker. Similarly, schools and employers often save money by testing only

once, rather than confirming test results with a second, more accurate, test. Conversely, those who use illegal drugs may go undetected if they drink large amounts of water before testing; add small amounts of salt, vinegar, or bleach to their urine sample; or time their drug use so the drugs will have left their bodies before they are tested.

In sum, developing a responsible policy regarding drug testing requires us to find a balance between public safety and protection of individual rights.

Sociological Questions

1. What social views and values about medicine, society, and the body are reflected in this policy? Whose views are these?
2. Which social groups are in conflict over this issue? Whose interests are served by the different sides of this issue?
3. Which of these groups has more power to enforce its view? What kinds of power do they have?
4. What are the intended consequences of this policy? What are the unintended social, economic, political, and health consequences of this policy?

U.S. women will have an abortion at some time during their lives (Allan Guttmacher Institute, 2001). As a result, preserving the safety of abortion services is an important health issue.

Illicit Drugs

The last cause of premature death listed in Table 2.3 is illicit drugs. According to Mokdad and his colleagues (2004), illicit drugs kill users through overdose, suicide, motor vehicle injury, HIV infection, pneumonia, hepatitis, and endocarditis (heart infections); and they kill nonusers by contributing to homicide and birth defects. In addition, illicit drug use can contribute to dangerous behaviors. This chapter's ethical debate discusses drug testing in schools and the workplace, which has emerged in response to these concerns. See Box 2.3.

The two illicit drugs that most often cause mortality and morbidity (although they are not the most commonly used illicit drugs) are heroin and cocaine (including “crack” cocaine). Both heroin and cocaine can cause physical addiction, although cocaine is usually used in quantities too small to do so (Weil and Rosen, 1998). Cocaine provides such great pleasure so briefly, however, that some individuals use it as often as possible, creating the appearance that they are addicted. As a result, both heroin and cocaine can cause people’s lives to spin out of control. Although heroin causes no direct damage to the human body, cocaine can cause severe sleep disturbances, which in turn can lead to paranoia and violence (Liska, 1997; Weil and Rosen, 1998). Cocaine also may increase the risk of heart failure or stroke, although evidence for this theory is limited.

In recent years, much public attention has focused on the problems of “crack babies.” Infants born to drug users do have higher than average rates of mortality and morbidity. However, a thorough reanalysis, published in the *Journal of the American Medical Association*, of all previous research on the topic strongly suggests that these problems are caused by the mothers’ poverty, malnutrition, lower education levels, or tobacco smoking rather than by their illicit drug use (D. Frank et al., 2001). In this reanalysis, the authors found that the higher rates of infant mortality and morbidity among drug users are more apparent than real, because virtually all research used data collected inconsistently after births, and doctors naturally were more likely to collect data on mothers’ drug use when babies had problems than when babies were born healthy.

Added to the inherent dangers of illicit drugs are the dangers caused by their illegality. As mentioned earlier, when drug users cannot obtain clean needles legally, they are likely to share needles and thus to increase their risks of HIV disease, hepatitis, and endocarditis. Similarly, users who buy drugs on the street cannot know how powerful the drugs are and thus risk overdose. For example, someone who typically injects heroin that is 30 percent pure can die if he or she accidentally buys heroin that is 60 percent pure and thus doubles his or her normal dosage.

Pneumonia, too, results not from the drugs themselves but from the poverty and disorganized lifestyle that can either lead to drug use or result from trying to obtain steady supplies of illegal drugs at the extraordinarily high prices charged by illegal drug dealers. Similarly, violence among heroin users results not from the drug itself (which makes users more passive) but because users must resort to crime to pay the high prices of illegal drugs. Cocaine, on the other hand, can directly stimulate violent behavior.

Research consistently shows that prevention and treatment programs are both cheaper and more effective than criminal sanctions in reducing the use and social costs of illicit drugs (Amaro, 1999). Unfortunately, about two-thirds of government funding for drug control goes to the criminal justice system, and only one-third goes to prevention and treatment.

Health Behaviors, Social Stress, and Illness

It is no secret that tobacco kills, guns can be deadly, sex without condoms spreads disease, and so on. So why do people continue to engage in behaviors that place their health at risk? And why do some people avoid illness despite apparently poor choices while others die young? The first question takes us to the issue of health behaviors, the second to the impact of social stress.

Health Behaviors and Health Lifestyles

The most commonly used framework for studying compliance is the **health belief model**. This model was developed by Irwin Rosenstock (1966) and extended, most importantly, by Marshall Becker (1974, 1993). Its original purpose was to explain why healthy individuals adopt preventive health behaviors. According to the model, four factors affect these decisions (see Key Concepts 2.1): (1) Individuals must believe they are susceptible to a particular health problem; (2) they must believe that problem is serious;

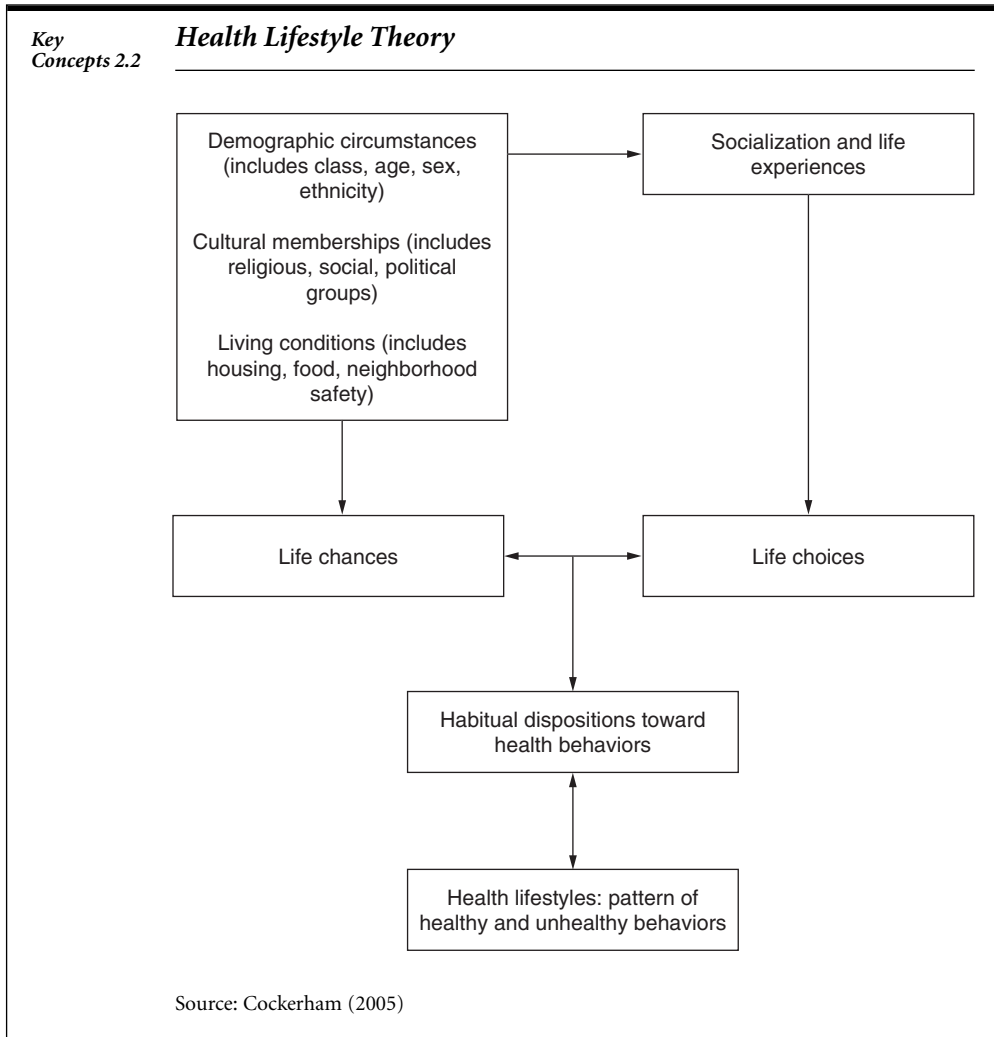
<i>Key Concepts 2.1</i> The Health Belief Model		
PEOPLE ARE MOST LIKELY TO ADOPT HEALTHY BEHAVIORS WHEN THEY:	EXAMPLE: ADOPTING HEALTHY BEHAVIORS LIKELY	EXAMPLE: ADOPTING HEALTHY BEHAVIORS UNLIKELY
Believe they are susceptible	Forty-year-old smoker with chronic bronchitis who believes he is at risk for lung cancer.	Sixteen-year-old boy who believes he is too healthy and strong to contract a sexually transmitted disease.
Believe risk is serious	Believes lung cancer would be painful and fatal, and does not want to leave his young children fatherless.	Believes that sexually transmitted diseases can all be easily treated.
Believe compliance will reduce risk	Believes he can reduce risk by stopping smoking.	Doesn't believe that condoms really prevent sexual diseases.
Have no significant barriers to compliance	Friends and family urge him to quit smoking, and he can save money by so doing.	Enjoys sexual intercourse more without condoms.

(3) they must believe adopting preventive measures will reduce their risks significantly; and (4) they must not perceive any significant barriers to doing so. For example, people are most likely to adopt a low-fat diet if they believe that otherwise, they will face high risks of heart disease, that heart disease will substantially decrease their life expectancy, that a low-fat diet will substantially reduce their risk of heart disease, and that adopting such a diet will not be too costly, inconvenient, or unpleasant. In turn, according to the health belief model, these four factors are affected by demographic variables (such as the individual's gender and age), psychosocial variables (such as personality characteristics and peer group pressures), structural factors (such as access to knowledge about the problem and contact with those who experience the problem), and external cues to action (such as media campaigns about the problem or doctors' advice).

Although this model incorporates the possibility for social factors as well as individual psychological factors to affect health decision making, in practice the model is most often used to identify why individuals make the choices they do. In other words, researchers who use this model tend to emphasize **agency**—individual free will to make choices—over **structure**—social forces that limit the choices individuals truly have available to them (Cockerham, 2005). As a result, such researchers, along with most policy-makers, more often promote policies such as educating consumers about the dangers of smoking than policies such as banning smoking in public places. The debate over the relative importance of agency and structure—often referred to as “life choices” versus “life chances”—is at the center of many theoretical discussions within sociology and, even more so, between sociology and other fields such as psychology and medicine.

All human behavior is affected by both agency and structure. No one blindly follows every social rule and expectation. Nor is anyone fully free of socialization, cultural expectations, and social limitations on what options are truly available. Nevertheless, knowing to which social groups an individual belongs allows us to predict the likelihood that he or she will adopt various health behaviors: Lower-class citizens are far more likely than upper-class citizens to smoke, men are far more likely than women to drink heavily, and so on. Consistent patterns such as these led sociologist William Cockerham to propose a new **health lifestyle theory** that acknowledges both agency and structure but emphasizes group rather than individual behaviors. Compared to the health belief model, this new theory offers a more comprehensive analysis of why healthy behaviors are or are not adopted.

Cockerham (2005: 55) defines health lifestyles as “collective patterns of health-related behavior based on [life] *choices* from options available to people according to their life *chances*.” (Emphasis mine.) According to this theory (see Key Concepts 2.2), decisions about healthy and unhealthy behavior begin with demographic circumstances, cultural memberships, and living conditions. First, these factors affect individuals' experiences and socialization regarding how to think about healthy and unhealthy behaviors—whether,



for example, they grow up learning to consider alcohol a tool of the devil or watching their parents routinely drink for pleasure. These factors also *directly* affect individuals' life chances (such as whether they have the education needed to avoid physically dangerous jobs) and, through their effect on socialization and experiences, *indirectly* affect their life choices (such as the decision to seek dental care). For example, someone who grew up middle class likely learned early to consider dental checkups important and likely has the money to purchase dental care as an adult. In turn, life choices affect life chances, and vice versa. Those who choose to drive safely are more likely to avoid injury and have better chances to get ahead in life, while those who have better chances to get ahead are more likely to try to avoid injury because they are looking forward to the future. As this theory suggests, life choices and life chances come together to create habitual dispositions toward

health behaviors—routine, almost instinctual ways of thinking about whether certain behaviors are or are not worth adopting. These dispositions are crucial to the health lifestyles individuals and groups adopt. Finally, Cockerham notes that not only do dispositions affect health lifestyles, but health lifestyles affect dispositions. As people's ways of thinking about behaviors such as smoking change, so do their behaviors; and as their behaviors change, so do their dispositions.

Social Stress

As we saw earlier, social stress helps to explain why life expectancy rises when income inequality rises. But the impact of social stress on illness extends far beyond this one circumstance. In fact, social stress can be considered another underlying cause of illness in general. It is therefore important that we understand both the nature of stress and its impact on health.

The Nature of Social Stress

The term **stress** has three major meanings. First, *stress* refers to situations that make individuals feel anxious and out of balance. (The term **stressor** is also used to refer to any specific source of stress, like buying a new house or losing a job.) Second, *stress* refers to the emotions that result from exposure to such situations. Finally, *stress* refers to the bodily changes that occur in response to these situations and emotions. For example, if we fight with a boyfriend or girlfriend, the fight itself can be referred to as a stress. Both during and after the fight, we are likely to experience the *emotion* of stress, as we wonder what the fight means for our relationship, and the *physical* stress of tensed muscles, rapid heartbeats, and heavy breathing, as our body gathers its resources in preparation for responding to the stress.

Although stress can be either acute or chronic, the latter form has far more serious health consequences. One form of chronic stress that has received considerable attention in sociology is **role strain** (Pearlin, 1989). *Role strain* refers to problems such as unwanted roles, rapidly changing roles, roles that exceed a person's resources and abilities, and conflicting roles (such as lacking the time to be both a good student and a good worker). The second form of chronic stress commonly studied by sociologists is that caused by broader social forces, such as income inequality and racism. In Chapter 3, we will discuss these stresses in more detail.

Stress is a natural, unavoidable, and sometimes beneficial part of life. Thousands of years ago, hunters experienced stress as they anxiously prepared to track wild animals, and farmers experienced stress as they wondered whether their crops would get enough rain. That emotional stress put physical stress on their bodies, but it also kept their minds focused on their tasks. If, for example, a wild animal suddenly attacked, a hunter might survive because the emotional stress resulted in the physical stress response known as the fight-or-flight syndrome. The same quick heartbeat and heavy

breathing we experience while fighting with a boyfriend or girlfriend could have saved the life of someone fighting or fleeing from a lion, because these physical changes help our bodies produce additional energy and oxygen and hence respond more quickly and effectively to threats.

The Impact of Social Stress

The fight-or-flight response is highly adaptive for dealing with sudden threats like rampaging lions, speeding cars, and last-minute quizzes. It is far less useful for dealing with chronic stresses like poverty, an ill child, or a racist supervisor. Each time the body responds to a threat, it uses muscles, energy, and other resources. Over the long run, such stresses wear out the body. Chronic stress is especially likely to affect the immune system, leaving the body less able to fight off infection or illness—from herpes to asthma to heart disease (House, 2002; Siegrist, 1996, 2001). It also can lead to mental disorders such as depression (a topic explored in Chapter 7) and to conditions on the border between mental and physical (such as insomnia, migraines, and colitis). In addition, stress can lead individuals to adopt health-threatening behaviors, including smoking tobacco, driving too fast, and participating in unsafe sexual activity.

But everyone does not respond in the same way to stress, whether acute or chronic. The likelihood that stress will affect health depends in part on how individuals *appraise* the stress and how they *cope* with the stress. In turn, both of these responses to stress depend on the *social resources* individuals bring to the situation (Ensel and Lin, 1991; Pearlin and Aneshensel, 1986). For example, flunking an exam is far more stressful for a student who could lose his scholarship as a result than it is for a student who has no such fears. It will also be less stressful if the student copes by quickly seeking out a good tutor, rather than by going out for a drink or blaming his poor score on an incompetent teacher. But the student's ability to respond effectively will be determined in part by his social resources: Has he learned from a young age to turn to alcohol as a coping measure? Do his friends encourage him to continue trying or to drop out? Does he have the funds needed to hire a tutor and the contacts needed to find a good one? The answers to each of these questions will affect whether this acute stress leads to chronic stress and, in the end, to ill health.

Conclusion

Recent years have seen an increasing tendency to blame individuals for their own health problems (a topic discussed further in Chapter 5). Yet as we have seen, patterns of disease stem from social conditions as much as, if not more than, they stem from individual behaviors or biological characteristics. As Marshall Becker, a sociologist and one of the researchers who has done the most to help elucidate why people engage in health-endangering activities, writes:

I would argue, first, that health habits are acquired within social groups (i.e., family, peers, the subculture); they are often supported by powerful elements in

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the general society (e.g., advertising); and they have proven to be extremely difficult to change. Second, for most people, personal behavior is not the primary determinant of health status and it will not be very effective to intervene at the individual level without concomitant attempts to alter the broader economic, political, cultural, and structural components of society that act to encourage, produce, and support poor health. (1993: 4)

In sum, improving the health of the population will require us to look beyond individual behavior to broader social structural issues—to look, in C. Wright Mills's terms, for public issues rather than personal troubles. Once we do so, we can focus our energies on such problems as restraining the manufacturers of illness and ensuring that public health considerations rather than special interests drive health policy.

Suggested Readings

Campos, Paul. 2004. *The Obesity Myth: Why America's Obsession with Weight Is Hazardous to Your Health*. New York: Gotham Books. A refreshing counterpoint to discussions of the dangers of obesity.

Miller, Judith, Stephen Engelberg, and William Broad. 2001. *Germs: Biological Weapons and America's Secret War*. New York: Simon & Schuster. A truly horrifying account of how terrorists and governments (including that of the United States) have developed biological weapons.

Stine, Gerald J. 2005. *AIDS Update 2005*. San Francisco: Benjamin Cummings. An excellent overview of AIDS in the United States.

Weil, Andrew, and Winifred Rosen. 2004. *From Chocolate to Morphine*. Rev. ed. New York: Houghton Mifflin. An iconoclastic review of both legal and illegal psychoactive drugs, coauthored by a famous medical school professor.

Getting Involved

Handgun Control and Brady Campaign. 1225 I Street NW, Suite 1100, Washington, DC 20005. (202) 898-0792. www.bradycampaign.org. The most influential national organization lobbying for stricter legal limits on handgun ownership.

Planned Parenthood Federation of America. 810 7th Avenue, New York, NY 10019. (212) 541-7800. www.plannedparenthood.org. The nation's foremost organization working for reproductive freedom.

Students Against Destructive Decisions (formerly Students Against Drunk Driving). P.O. Box 800, Marlborough, MA 01752. (877) SADD-INC. www.saddonline.com. Organization created by and for students to educate about the dangers of drunk driving. It has since expanded its mission to educate about depression, suicide, violence, and other dangers that young people face.

Review Questions

What is the difference between morbidity and mortality, incidence and prevalence, and acute and chronic illnesses?

What is the epidemiological transition?

What factors caused the decline in mortality between the nineteenth and early twentieth centuries?

What factors have caused the recent increases in infectious diseases, including tuberculosis and HIV disease?

How is globalization affecting rates of disease?

How have the “manufacturers of illness” increased deaths caused by tobacco? by alcohol? by toxic agents? By diet?

How have social forces and political decisions increased deaths caused by sexual behavior? caused by illicit drugs?

What system-level factors help to explain medical errors? How does medical culture keep doctors from identifying medical errors?

Think of someone you know who smokes or engages in another unhealthy behavior. Use the health belief model to explain what would have to change for him to change his behavior. Then use health lifestyle theory to explain why you yourself do or do not have a generally healthy lifestyle.

Internet Exercises

Find the website for the Center for Science in the Public Interest (CSPI) and see what it has to say about the health issues involved in either alcohol or food manufacturing. How does it define and describe the problem? Then find a website for an alcohol or food manufacturer or manufacturing group and compare its coverage of the issue with CSPI’s coverage. Manufacturer groups include the Beer Institute, the Wine Institute, the Distilled Spirits Council, and the National Broiler Council (for poultry-processing manufacturers).