

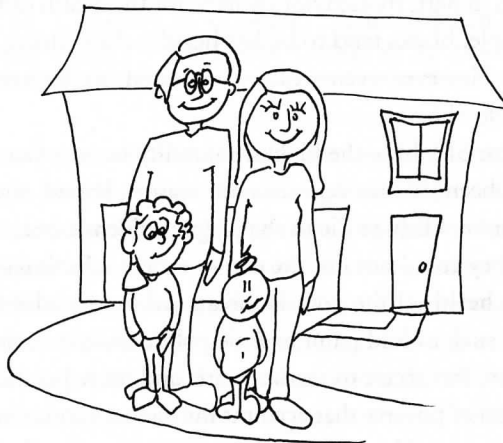
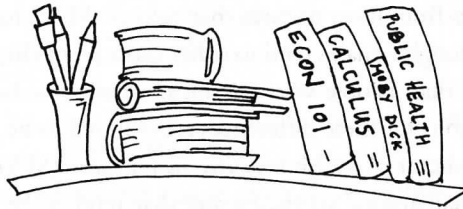
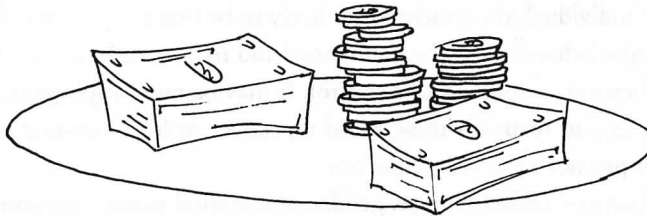
INTRODUCTION TO Public Health

Third Edition



Mary-Jane Schneider

How Psychosocial Factors Affect Health Behavior



Healthy, Wealthy, and Wise

While individual behavior plays a major role in determining a person's health, as Chapter 13 discussed, many factors influence individual behavior. Humans are social creatures, and their behavior is strongly affected by their social environment. This accounts, at least in part, for the fact that diseases tend to be distributed in the population according to certain patterns: certain groups have characteristic disease patterns that remain constant over time even when individuals in the group change. From a public health perspective, it may be more efficient to try to change the social environment that influences people to behave in unhealthy ways than to try to change people's behavior one individual at a time.

Another reason to consider the social environment in studying health behavior is that when the focus is on the individual, the conclusion is likely to be that the person is to blame for his or her illness. Unhealthy behaviors may be maintained and reinforced by aspects of the social environment that are beyond the individual's control. It may be more appropriate for public health intervention programs to focus on these social aspects or at least consider them in designing programs aimed at promoting healthy behavior.

Demographic factors—including race, gender, and marital status—are consistently found to influence health. Statistics show that most ethnic minorities in the United States have significantly higher mortality rates from most diseases than whites. Males have higher mortality rates than females at all ages, although females tend to suffer more from chronic illness. Married people are in general healthier than people who are not married, whether single, separated, widowed, or divorced. The reasons for these differences are believed to be primarily social.

The most important predictor of health is *socioeconomic status* (SES), a concept that includes income, education, and occupational status, factors that tend to be strongly associated with each other. SES accounts in part, though not entirely, for the health differences by race, sex, and marital status. For example, blacks tend to be less healthy than whites, and they generally have lower SES than whites. However, even wealthy, educated blacks have higher mortality rates than whites of comparable SES.¹

Groups with the lowest SES have the highest mortality rates, a fact that is true in many different countries and has been true for centuries, for reasons known and unknown.² In London in 1665, the poor were more likely to die in the plague epidemic because of poor nutrition and sanitation and because they could not flee the city to escape infection as the wealthy did. In the United States today, the health of the poor is threatened by the adverse environmental conditions of the inner cities, such as lead paint and air pollution, crime, and violence. Poor people also have poorer nutrition, less access to medical care, and more psychological stress.

It is not only the effects of poverty that account for socioeconomic variations in health, however. The association is seen at all levels of the socioeconomic scale, the very rich being healthier than the rich, who are healthier than the middle class, and so on. In a study of British civil ser-

vants called the Whitehall Study, mortality rates over a ten-year period were compared across four employment grades. Top administrators were compared with executives and professionals, the clerical staff, and unskilled laborers.³ As seen in Figure 14-1, higher employment status was associated with a lower risk of dying.

Cumulative conditional
probability of death (%)

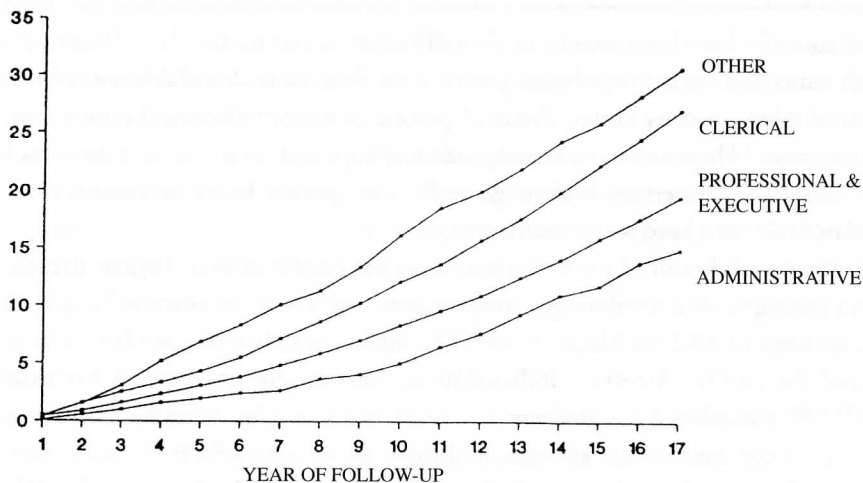


FIGURE 14-1 Mortality from All Causes by Year of Follow-Up and Grade of Employment, in Whitehall (U.K.) Male Civil Servants, Initially Aged 40–64.

Source: M. G. Marmot, M. J. Shipley, & G. Rose, "Inequalities in Death—Specific Explanations of a General Pattern?" *The Lancet*, 1:1003 © By The Lancet Ltd. 1984a.

Part of the reason that people with higher SES are healthier seems to be that people with more education behave in healthier ways. For example, in 2006, 28.8 percent of Americans without a high school diploma smoked, while of those with a bachelor's degree or higher, only 8.2 percent smoked. Those with more education were also more physically active.⁴(Table 64) Similarly, the Whitehall Study questioned subjects about their habits and found that those in higher employment grades were less likely to smoke, more likely to exercise, and more likely to eat a healthful diet that included skim milk, whole grains, and fresh fruits and vegetables.³

Variable access to medical care is another factor that has been blamed for some of the socioeconomic differences in health. In the United States, where 15 percent to 20 percent of the population—mostly those in low socioeconomic groups—lacks health insurance, it is often argued

that universal health insurance could reduce health inequalities. However, the SES differences in mortality are also seen in Britain, Scandinavian nations, and other countries that have national health programs. The British civil servants in the Whitehall Study all had the same medical coverage by the National Health Service; yet the mortality risks were still higher at lower employment grades, even when behavioral factors were taken into consideration.

Health of Minority Populations

Race and ethnicity have been seen to profoundly affect health in the United States. Most data on health status of different population groups show that the health of African Americans, the largest racial minority, constituting about 13 percent of the population, is poorer than that of white Americans. Hispanics are a heterogeneous group, and their health status varies among different subgroups. American Indians generally have poorer health indicators than whites, while Asian Americans have better health status.

While the overall health of the U.S. population has improved over the past decades, health disparities among racial and ethnic groups have persisted. Life expectancy at birth in 2005 was 78.3 for whites and 73.2 for blacks.^{4(Table 26)} The infant mortality rate of blacks was 2.3 times higher, and the rate for American Indians/Alaska Natives was 1.4 times higher than that of whites.^{4(Table 18)} Mortality from diabetes is almost twice as high in American Indians than whites, and more than twice as high in blacks as in whites.^{4(Table 28)} Black men die of prostate cancer at 2.3 times the rate of white men.^{4(Table 28)} The death rate from HIV/AIDS is almost 9 times higher among blacks than whites, way out of proportion to their percentage of the population.^{4(Table 28)}

The health disparities may be accounted for in part by the lower SES of blacks, who live in households with median incomes \$16,000 less than the average for the nation.⁵ Over 33 percent of black children were living in poverty in 2006, as compared with one out of ten white non-Hispanic children.⁵ Blacks have less education on average than whites, and they have higher unemployment rates. The reasons for the socioeconomic disparities are complex and somewhat inaccessible to public health interventions. Moreover, the relationship between socioeconomic status and health is not entirely understood. Nevertheless, public health must find ways to improve the health of groups that have historically been disadvantaged economically, educationally, and politically. The federal government predicts that by 2050, nearly half of Americans will belong to racial and ethnic minorities. If the health disparities are not remedied, the overall health of the U.S. population is likely to decline.⁶

Public health interventions aimed at improving the health of minority groups include efforts to influence their health behaviors. These efforts begin with attempts to understand what factors influence health and health behavior, how these factors may affect people of various ethnic

and racial groups differently, and what kind of interventions can be effective in modifying these factors. This chapter and later chapters that consider specific health behaviors will examine how minority groups differ from the majority white population and how those differences may be related to the observed disparities in health.

Stress and Social Support

A number of psychological factors have been found to influence health, some of which may have a role in the health effects of SES. One of these factors is stress, which is due to the adverse physical and social conditions associated with lower SES, which may act both directly, by affecting physiological processes, and indirectly, by influencing individual behavior. Early evidence of the health effects of stress came from observations that widows and widowers seemed to have an unusually high risk of dying soon after the death of their spouses. Several studies in the 1960s and 1970s found that mortality rates of survivors are 40 percent to 50 percent higher during the six months after the death of a spouse compared to the mortality of married people of the same age. These studies were expanded to include the effects of other stressful life events such as death of other family members, divorce, and loss of a job, all of which were found to increase the risk of illness or death.⁷

Stress is well established as a contributor to heart disease, a relationship that has been demonstrated in a variety of epidemiologic studies. A particularly convincing example is a study of the male employees of two banks. At first, the two groups were similar, but one bank changed its management policies to become commercial. The employees of the commercial bank had to deal with considerable competition, risk, and responsibility for investing funds; employees of the other bank, a semipublic savings bank, had less competition and fewer responsibilities. Over a ten-year period, the employees of the commercial bank were found to have 50 percent higher rates of heart attacks and sudden death.⁸

Experiments on animals ranging from rats to baboons have found that various psychosocial stresses induce physiological changes such as decreased immune response and increased atherosclerosis. A 1991 experiment on humans demonstrated that stress suppresses the immune response in humans also. In that experiment, investigators measured levels of psychological stress in 420 healthy volunteers, then administered nasal drops containing cold viruses to all but a small control group. They found that the subjects whose stress levels were higher were more likely to be infected with cold viruses and more likely to develop colds, with symptoms including sneezing, coughing, eye watering, nasal discharge, sore throat, and increased use of tissues.⁹ A whole new field of research called psychoneuroimmunology has arisen to study the impact of stress on health.

There are many reasons why lower SES exposes people to greater life stress. Daily hassles are greater at lower levels on the SES hierarchy: cars break down, landlords complain about late rent checks, child care is unreliable, officials are rude. Members of racial and ethnic minorities may be exposed to incidents of racial prejudice. These minor but constant stresses may be as debilitating as such major life events as deaths in the family. Higher income and education provide resources that help to buffer the impact of life's hassles, thereby protecting health.

A number of factors can help people cope with life's stresses. Money, of course, can solve a multitude of problems. Education is important because it provides the information and skills to solve problems. Family and friends can also help by providing both emotional and instrumental assistance. In fact, social support has proven to be surprisingly significant in determining an individual's health.

Early evidence for the influence of social support on health came from an epidemiologic cohort study conducted on residents of Alameda County in California. Persons aged 30 to 69 were surveyed in 1965 on their physical, mental, and social well-being as well as their health-related habits such as exercise and the use of cigarettes and alcohol. They were also asked about their social networks, such as marital status, number of close friends and relatives, church membership, and affiliation with other organizations. Death certificates were then monitored over the next nine years to assess mortality rates and, in 1974, a follow-up survey was conducted on survivors to assess their health status.¹⁰

The study, as expected, found a strong association between certain unhealthy behaviors and higher mortality rates. More surprising, the study also found that an individual's health status and risk of dying were strongly associated with the extent and nature of his or her social network. This was true for both men and women and for individuals of high SES and low SES. The association remained true even after unhealthy behaviors were taken into consideration. Throughout the socioeconomic spectrum, men and women with few social contacts had mortality rates two to three times higher than those with many social connections.

Many more recent studies have supported the conclusions of the Alameda County study. Absence of social support has been related to an increase in coronary heart disease, complications in pregnancy and delivery, suicide, and other unhealthy outcomes.¹¹ Why social support should have such a broad and consistent effect on health is very poorly understood. It probably acts in part through its ability to buffer stress. A better understanding of the relationship between social support and health may come from research in the field of psychoneuroimmunology.

Psychological Models of Health Behavior

While public health does not have much power to change people's SES, stressful life events, or social networks, it is hoped that understanding how these factors affect health may permit more effective interventions to promote healthier behavior. With this goal, social and behavioral scientists have proposed various theories and models attempting to explain how psychosocial factors affect health-related behavior. Some of these theories focus on individual psychology, while others attempt to explain the effect of the social environment on individual behavior. The goal of these analyses is to understand the most effective ways to promote healthier behavior.

The classic frame of reference for understanding health behavior, and especially behavior change, is the health belief model. Assuming that people act in rational ways, the health belief model specifies several factors that determine whether a person is likely to change behavior when faced with a health threat. These factors are (1) the extent to which the individual feels vulnerable to the threat, (2) the perceived severity of the threat, (3) perceived barriers to taking action to reduce the risk, and (4) the perceived effectiveness of taking an action to prevent or minimize the problem.

Based on the health belief model, the public health approach to changing behavior would be to convince people that they are vulnerable, that the threat is severe, and that certain actions are effective preventive measures. For example, surveys of low-income minority women who had not had mammograms found that many had misperceptions about the disease. Some women underestimated their susceptibility to breast cancer (factor 1); others were embarrassed or afraid of the pain or radiation involved in a mammogram (factor 3); and others felt that cancer was not curable and therefore there would be no point in diagnosing it early (factor 4). Screening rates among these women could be improved by counseling that included personally tailored messages that addressed the women's beliefs and concerns.¹²

Another important concept in understanding health behavior is self-efficacy, the sense of having control over one's life. People who are confident that they can control their lives are said to have high self-efficacy. People who believe their lives are subject to chance or external forces are said to have low self-efficacy. Self-efficacy is often added as a fifth factor in the health belief model. People are more likely to adopt healthy behavior if they are confident that they have the ability to do so.¹²

A sense of control is beneficial for health in a number of ways. Clearly, it reduces stress. A number of studies in both humans and animals have shown that an individual's perception of the stressfulness of an adverse event can be reduced by two factors: knowledge of when the stressful event will occur and the ability to regulate the timing and intensity of the event. This knowledge and ability give the individual a sense of control, or self-efficacy. The lowest self-effi-

cacy is seen in people (or animals) who have experience of being unable to avoid noxious events, especially if they have repeatedly tried and failed. They may develop a pattern of "learned helplessness," a pattern described as a "numbed acceptance of a negative situation, so that an individual no longer tries to change that situation for the better because he or she does not expect those efforts to make any difference."^{13(p.44)}

A number of studies have shown that people with high self-efficacy are more likely to engage in health-promoting behavior than those with low self-efficacy. An attitude of learned helplessness is common in people who have repeatedly tried and failed to quit smoking or lose weight.

A great deal of research has been focused on how to increase people's self efficacy, thereby helping to motivate them to practice healthy behaviors. An individual's self-efficacy is increased by previous successful performance of the behavior in question. It may also be increased by seeing others successfully perform the behavior, especially if the model is similar to the individual. For example, the most successful school drug prevention programs include role-modeling, small group exercises, and skills practice to teach students how to identify and resist internal and external pressures to use drugs. These programs have been found to be much more effective in enhancing students' self-efficacy to resist drugs if they are led by older teens, with whom they can identify, rather than by adult health educators.¹⁴

A theory that has proved widely useful in health education is the transtheoretical model, which envisions change—for example smoking cessation or adopting a healthy diet—as a process involving progress through a series of five stages: precontemplation, contemplation, preparation, action, and maintenance. People in the *precontemplation* stage have no intention to change their behavior; the first step in getting them to change involves consciousness-raising to increase their awareness that their behavior is unhealthy and should be changed. In the second, *contemplation*, stage, the person is more aware of the benefits of change, but is also very aware of the difficulties and barriers to change and still is not ready to take action. The third step is *preparation*, when a person has decided to make the change and has planned concrete actions he or she could take, such as signing up for a class, discussing the plan with their physician, or buying a self-help book. The fourth step, *action*, requires that individuals actually modify their behavior by abstaining from smoking or adhering to a healthier diet. Finally, *maintenance* is the stage in which people have achieved the healthier behavior but must strive to prevent relapse.¹⁵ Knowing which stage an individual has reached can help a physician or health educator move him or her along to the next stage.

The health belief model and the transtheoretical model are not contradictory; they are merely alternative ways of looking at what may be the same psychological factors. Both models can be useful in designing public health messages aimed at changing behavior.

Ecological Model of Health Behavior

In accordance with the recognition that individual beliefs and behaviors occur in a social context and that health promotion may be more effectively achieved through changing the social environment, so-called ecological models have been proposed for understanding health behavior.¹⁶ An ecological model looks at how the social environment, including interpersonal, organizational, community, and public policy factors, supports and maintains unhealthy behaviors. The model proposes that changes in these factors will produce changes in individual behavior.

The ecological model, illustrated in **Figure 14-2**, describes five levels of influence that determine health-related behaviors; each level is a potential target for health promotion intervention. The first level—*intrapersonal* factors—encompasses the knowledge, attitudes, and skills of the individual. This is the level that has been explored by the psychological theories discussed earlier in this chapter. The second through fifth levels—interpersonal relations, institutional factors, community factors, and public policy—each have an impact on individual behavior both directly and indirectly, by interaction with the factors at other levels of influence.

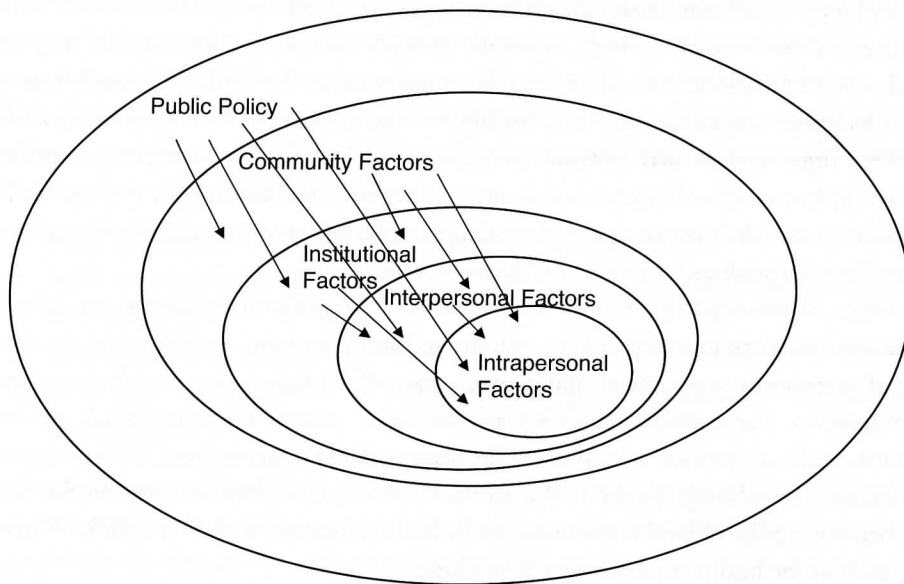


FIGURE 14-2 Ecological Model

The second level of influence, *interpersonal* relations—including family, friends, and coworkers—has very important effects on health-related behavior. Families, of course, are the origin of many health behaviors, especially habits learned early in life such as tooth brushing, exercising, and eating patterns. In the teen years, pressure from peers becomes more significant in influencing individual behaviors, such as smoking, using alcohol and drugs, and engaging in other risk-taking behavior. On the positive side, family and peer relationships provide the social support discussed earlier in this chapter.

Application of the ecological model at the interpersonal level would lead to different strategies in a teen drug prevention program depending on the nature of the teens' social relationships. A teen who belongs to a dense, homogeneous network will be more influenced by the norms and values of that group than a teen who relates individually to a number of separate individuals. In the close-knit group, drug prevention programs would have to focus on changing the norms about drug use within the existing network. When social networks are more loosely organized, the program might focus on creating drug-free networks, encouraging teens to associate with those networks, and reducing the desirability of membership in drug-using networks.

The third level of influence is significant because people spend one-third to one-half of their waking lives in *institutional* settings, especially schools and workplaces, which may have profound effects on their health and health-related behavior. In the workplace, employees may encounter hazardous chemicals or risks from injuries and accidents. Stress may be a problem. Alternatively, organizations may provide a corporate culture that supports positive behavior change. Workplace or school cafeterias may provide health-conscious menus; exercise facilities may be available and their use encouraged; smoking restrictions may prevail. Schools and workplaces provide ideal settings for public health intervention.

The larger *community*—the fourth level—can be a significant influence on behavior. Organizations can work together in a community to jointly promote healthy goals. An understanding of community organization and networks can offer insight into promising avenues for health promotion. For example, churches are the social centers for many black and rural communities and may provide a focal point for health-related interventions. Conversely, community factors may sabotage public health efforts to promote healthy behavior. In the South, where tobacco is a pillar of local economies, public health advocates may find it difficult to even raise the issue of the health consequences of smoking.

At the fifth level, *public policy* encompasses the regulations and limitations on behavior that have been discussed in previous chapters, including Chapters 2 and 13. These are the most explicit and controversial measures that local, state, and national governments take to promote healthy behaviors. Such measures include smoking restrictions, age limits on alcohol sales, seat-belt laws, and so forth.

Health Promotion Programs

As social and behavioral scientists gain a better understanding of how people's behavior is affected by their own beliefs and by the various levels of influence in their social environment, theories such as the health belief model and the ecological model are being used to design more effective public health and disease prevention programs. A good example is provided by an AIDS prevention program targeted at gay men in San Francisco in the mid-1980s.¹⁷ Prevention of infection through behavior change was and is still the most effective approach to AIDS control because there is as yet no biomedical solution to the problem—no vaccine and no proven cure.

In the 1980s, San Francisco was the city with the second highest number of AIDS cases in the United States. Most of the cases occurred in gay men, and the primary means by which the virus was transmitted was by sexual intercourse between men. Almost as soon as this was understood, a prevention campaign was launched by the city health department in collaboration with community-based AIDS organizations and a research group from the University of California. They mounted an intensive media effort to inform at-risk individuals about the practice of safer sex. However, researchers understood that merely providing knowledge was not sufficient to change people's behavior. By interviewing small groups of gay men, they identified key beliefs that must be addressed if the messages were to be acted on by the target population.

This approach combines elements of three theories discussed above: the health belief model, self-efficacy, and the ecological model. The campaign's goals were to promote the following beliefs among high-risk individuals:

1. Belief in personal threat (i.e., "I am susceptible to infection").
2. Belief in response efficacy (i.e., "There is something I can do that will lessen the threat of infection").
3. Belief in personal efficacy (i.e., "I am capable of making these changes").
4. Belief that new behaviors are consistent with group norms (i.e., "My peers support new behaviors").¹⁷

The first belief was relatively easy to achieve because of the extensive publicity about AIDS in the general media. News and entertainment media aimed at gay men, including gay newspapers, comic books and leaflets, and telephone hot lines could be used to focus more on the second and third beliefs. Gay organizations held small group training sessions to teach skills in the use of condoms as well as interpersonal communication skills such as the ability to negotiate safer sex practices with prospective sex partners; this helped to enhance perceptions of self-efficacy among those at risk. To achieve the fourth belief, messages sought to encourage the perception that low-risk behaviors could be pleasurable and satisfying.

The first three elements of the campaign targeted individual health beliefs and self-efficacy. The fourth element addressed interpersonal and community influences. The campaign targeted community influences by providing educational programs for bartenders in establishments frequented by gay men. Condoms were made widely available in bars and small group meetings and were distributed by volunteers on street corners. The public policy, government level of influence was brought in through provision by the city of free, confidential testing for the human immunodeficiency virus (HIV) antibody. Because public bathhouses were a frequent site of high-risk behavior, there was pressure on the city government to close them, as was done in New York City. However, the campaign as a whole was so successful in changing the behavior of gay men that business at the bathhouses fell off, and public health officers were satisfied with merely posting warnings to the clientele about safe sex.¹⁸

The San Francisco AIDS prevention program was highly successful. Surveys done between 1984 and 1988 found that gay men had dramatically reduced their high-risk sexual behaviors during that period. For example, the percentage of men who reported engaging in unprotected receptive anal intercourse—the behavior most likely to transmit HIV—fell from 44 percent to 3 percent over the four years of the study.¹⁹ When rates of seroconversion among gay men from HIV-negative to HIV-positive were analyzed, the researchers found that the behavior changes had paid off: between 1982 and 1986, seroconversion rates fell from 13 percent to only 1 percent.

The early success of AIDS prevention programs among gay men, in the rest of the country as well as in San Francisco, was attributable largely to the fact that the gay community was in general well educated and politically astute. The epidemic's potential victims tended to be of high SES, motivated to preserve their health and able to mobilize resources to cope with the impending threat. Thus, they were more receptive to the health promotion campaign than other groups at risk for HIV. However, the success at reducing high-risk behavior has not been maintained. Ongoing studies of gay men in San Francisco found that the prevalence of unprotected anal intercourse had increased from 31 percent in 1998 to 46 percent in 2007. Despite continuing HIV prevention programs, the prevalence of HIV positive status among gay men in San Francisco has stabilized at about 24 percent.²⁰

Public health workers attribute the resurgence of sexual risk behaviors to the advent of highly active antiretroviral therapy in 1995. Because of the remarkable effectiveness of the new drug treatments, many younger gay men saw HIV infection as a less severe threat (a factor in the Health Belief Model) than did older gay men. The growing number of infected individuals, who are living longer because of therapy, and the persistence of unsafe sexual behaviors have led to a high rate of new infections, which more than replace the number of gay men who die from AIDS, which remains stable.²⁰

Researchers in San Francisco believe that high rates of infection will persist in that community and stress the need for intensification of effective prevention strategies. In other parts of the country, different approaches may be necessary to reach high-risk groups. For example, among blacks—the population with the highest prevalence of HIV—men who have sex with men (MSM) often do not identify as gay. Thus prevention messages targeted at them might need to be different from those used in San Francisco.²¹ A large number of studies have been done on behavioral interventions for HIV prevention and their effectiveness at reducing risky sexual behaviors. Evidence has shown effectiveness for individual person-to-person counseling, group-level programs that include a skill-building component delivered by other MSM, and to a lesser extent, community-level programs that can motivate and reinforce behavior change. There is little evidence, however, on how to reach minority MSM who do not regard themselves as part of the gay community. Other high-risk groups that need targeted programs include black women, who may be at risk of infection because of heterosexual intercourse with bisexual black men, and intravenous drug users.

Unfortunately, health promotion and disease prevention programs cannot be done once and for all. They must be repeated for every generation and every new at-risk group.

Changing the Environment

As more is being learned about what influences people to behave the way they do, many advocates believe that public health programs, to be effective, must concentrate less on individual behavior and more on changing the environment—both the social environment and the physical environment—to make it easier for people to behave in healthy ways. For example, there are many fewer deaths from motor vehicle crashes now than there were two decades ago, as discussed in Chapter 17. This public health success comes less from educational programs about safe driving than it does from safer design of highways and automobiles.

Similarly, the San Francisco HIV researchers suggest that social biases against homosexuality may contribute to the AIDS epidemic. They propose that recognition of same-sex marriage might encourage more stable relationships among gays, reduce the number of sexual partners by each individual, and thereby reduce the individual's risk of being infected. Public policy affects risk of HIV infection among intravenous drug users by providing access to needle exchange programs, which are illegal in some communities.

Environmental factors influence people's diet and activity patterns, which are the second most important factor in Americans' poor health. As discussed in Chapter 16, the government recommends that people eat five servings daily of fresh fruit and vegetables, but educating people who live in poor areas of the inner city will not help improve their diets if they do not have

access to supermarkets or produce stands. Similarly, federal policies that since World War II have favored a suburban lifestyle must bear much of the blame for Americans' lack of exercise: people live in their cars because most places are not within walking distance.

The environmental perspective forces people to think of public health problems as social and political issues that require collective action. Instead of blaming smokers for lack of will power, public opinion has shifted its focus to the tobacco industry and the enormous resources the industry has put into making their product attractive to young people, a way of thinking that has led to a remarkable change in public attitudes toward smoking. People take action, as black activists did against the alcoholic beverage industry when it began aggressively marketing high-powered malt liquors to young black males.²² This approach may lead to confrontations with very powerful economic interests, and it will not always be successful. However, when whole communities become involved, it has the potential of being the most effective way to bring about major changes in health and behavior.

Conclusion

Because health is so strongly affected by behavior, it is important for public health advocates to understand what influences people to behave in healthy or unhealthy ways. The social and behavioral sciences offer insights into why people behave as they do, and they provide a basis for developing interventions aimed at persuading people to change their behavior.

There is evidence that factors such as race, gender, marital status, and especially SES influence health, and the reasons for these differences are likely to be social. Life expectancy, infant mortality, and mortality rates from a variety of diseases vary profoundly among different racial and ethnic groups. Stress, which may be brought on by social factors, has an adverse effect on health for a number of reasons. Social support has been found to have a positive effect on health, probably in part by providing a buffer against stress. The health of black Americans tends to be poorer than that of the white majority. Health data on the population is usually analyzed by race and ethnicity, and public health efforts focus on understanding the disparities and trying to eliminate them.

Theories of health behavior include the health belief model and the theory of self-efficacy. Both theories focus on the individuals' attitudes and beliefs as determinants of their behavior. The transtheoretical model of stages of change can be used in health education programs to promote behavior change. A broader perspective is provided by the ecological model of health behavior. This model considers all the levels of influence that may affect the individual's attitudes and beliefs, including interpersonal relationships such as family and friends, institutional influence such as school and work, the larger community and its values and beliefs, and public policy including laws and regulations.

The most effective public health intervention programs influence people's beliefs at several levels with the goal of creating a social environment favorable to healthy behavior. The San Francisco AIDS prevention program is an example of an effective program that succeeded in significantly reducing the transmission of HIV early in the epidemic. Evidence shows, however, that in order to maintain the success of such a program, intensive public health efforts must be maintained, both to prevent relapses into unhealthy behavior and to educate new generations of at-risk people.

Increasingly, public health advocates realize that the most effective ways of improving health-related behavior of individuals is to focus on involving whole communities in improving the social and physical environment to be more conducive to healthy behavior.

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