PART

1

PUBLIC HEALTH PREVENTION FOCUS

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HISTORY AND IMPORTANCE OF PUBLIC HEALTH

After reading this chapter, you should be able to

- Understand the use of the skills of public health in the prevention of workplace illness and injuries.

- Understand what public health departments do and how they accomplish their goals.

- Discuss the advantages of partnerships between workplaces and public health departments.

- Explain the evolution of public health responsibilities in the United States.

It is difficult for most people to understand what public health does because they very rarely if ever have to deal with a public health department. Public health agencies become visible only when a health problem receives extensive media coverage. Yet the work that has been completed by public health over the last century is one of the main reasons for the long life expectancy of most Americans.

One way to understand public health is to compare a physician and a public health professional. The physician is most concerned with the health of his or her individual patient whereas the public health professional is concerned with the health of the community. More broadly, the medical care system in our country focuses attention and resources on the individual and the cure of disease whereas the public health system is concerned with the population and the prevention of disease.

Shi and Singh (2008) point out that many people believe that public health is nothing more than a massive welfare system. The agency responsible for the good health of Americans is not a welfare program but a separate agency of government that is supplemented by many nonprofit public health agencies. Every organization should have an interest in the important programs that protect and promote the health of all citizens. It is unfortunate that most people do not come to really understand public health until there is an emergency and that they forget about public health after the emergency ends.

Schneider (2006) believes that public health is concerned with the prevention of disease and the promotion of health. This definition places public health in the area of primary care. McKenzie, Pinger, and Kotecki (2005) argue that public health involves governmental actions to promote, protect, and preserve the health of a population. However, public health activities are also performed by nongovernmental agencies. The perception of public health agencies as responders to health emergencies prevents even health policy experts from understanding the contribution that could be made by public health departments in solving the current health care problems in this country. These departments do many things that prevent disease but that are never publicized and therefore are not known by the average person.

The public health system is always working at making good health available for all individuals. It is usually seen as a silent component of health services, one that demands few resources and still produces immense value for all of our citizens in terms of better health for all. This system employs some of the most dedicated health professionals to be found in any part of this country's health care system. These individuals have special skills that could be extremely useful in helping employers keep their workforces healthy and free from disease and injury.

A BRIEF HISTORY OF U.S. PUBLIC HEALTH

As just described, the valuable contribution made by public health professionals year after year is largely taken for granted. People think of public health and public health departments only when an emergency threatens their health and they need guidance and answers from public health officials and the various governmental agencies that

they represent. Problems like E. coli in our food supply, anthrax in the mail, contaminated water, or drug-resistant tuberculosis bring public health to the forefront until the crisis subsides, and then public health departments seem to disappear until we need their help again.

Many definitions of public health point to a science dedicated to the improvement of the health of everyone. In 1926, Winston defined public health as "the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals." McKenzie et al. (2005) define public health as the health status of the population, including governmental action to promote, protect, and preserve people's health. Novick, Morrow, and Mays (2008) define public health as "organized efforts to improve the health of communities." Vetter and Matthews (1999) argue that public health is "the process of promoting health, preventing disease, prolonging life and improving the quality of life through the organized efforts of society." And Turnock (2009) points out that public health represents a collective effort to deal with unacceptable realities that usually result in poor life outcomes that could have been prevented.

These various definitions of public health also offer a vision of **population-based medicine** rather than medical care centered around a specific individual. They emphasize prevention of health problems rather than a cure for health problems. If fully employed, the principles of public health could provide an answer to many of the problems that plague our current medical care delivery system. There also seems to be a major role for public health involvement in workplace health and safety issues.

Awofeso (2004) identifies six major approaches to public health that have been taken over the centuries:

■ Public health as health protection (antiquity to 1830s)

■ Public health as sanitary movement (miasma control) (1840s to 1870s)

■ Public health as contagion control (1880s to 1930s)

■ Public health as preventive medicine (1940s to 1960s)

■ Public health as primary health care (1970s to 1980s)

■ The "new public health"—health promotion (1990s to present)

These approaches offer a number of insights into the history of public health in the United States. There has been an emphasis on control of disease, regulation of some parts of the health care system, and more recently a stronger role in the development and implementation of prevention programs. The word *control* is frequently heard when describing the historical development of public health: control of disease, control of the free movement of people (quarantine), and control of certain high-risk behaviors.

Public health departments in the late 1800s and early 1900s became very successful at controlling the spread of diseases but were not so good at preventing these diseases

from occurring in the first place. This changed with the development of vaccines that virtually eliminated childhood illnesses. In addition, the discovery of penicillin allowed public health departments to cure many sexually transmitted diseases in special clinics that concentrated on the control of venereal diseases. Public health professionals were trained to interview those infected with venereal diseases, find their sexual contacts, and bring them to treatment. This strategy resulted in a reduction in these diseases until public health resources were reduced through budget cuts.

It has taken a long time for the emphasis to begin to shift from the word *control* to a new word, *prevention.* Public health departments are now assuming greater roles in prevention that entail keeping people healthy and free from disease. Unfortunately, up to this time, limited budgets never allowed these departments to truly prevent anything except through the use of vaccines.

Nevertheless, from these earlier approaches came a number of very effective public health programs that saved lives, reduced morbidity, and added several years to the average life span of most Americans. In antiquity, in the very early years of the development of public health, people believed that disease was somehow caused by supernatural forces and therefore that epidemics were a punishment by god or other spiritual forces. When epidemics of plague, leprosy, cholera, and the like occurred, it was thought very little could be done about these outbreaks, some of which had mortality rates greater than 30 percent of the population.

Miasma control, an approach beginning in the 1830s, was usually the result of industrialism and urbanization that allowed public health conditions to worsen. The United States and other countries moved from farming to manufacturing, and people moved from farms to cities. People working and living closer together provided an environment for disease to develop and spread rapidly from person to person. According to McKenzie et al. (2005), the major theory of disease at this time was that vapors or miasmas were the cause of many diseases and that these diseases, resulting from a filthy environment, could be eliminated only by cleaning and other environmental precautions. A famous report by Edwin Chadwick, titled *Report on an Inquiry into the Sanitary Condition of the Labouring Population of Great Britain*, documented the influence of filthy conditions on the occurrence of disease.

Lemuel Shattuck's 1850 *Report of the Sanitary Commission of Massachusetts* was one starting point for the development of public health in the United States. This report called for the development of public health departments that would have the responsibility for handling the public health concerns of the population of a locality or state. This report was a response to the need to have the authority to deal with infectious diseases and environmental problems, and it focused on state and local responsibility to deal with these issues.

The next era of public health involved the germ theory of disease, first proposed by Louis Pasteur in 1862. Discoveries in this era revealed the identity of such bacterial diseases as typhoid fever, leprosy, tuberculosis, cholera, diphtheria, and tetanus. This era also saw the founding of the American Public Health Association, the start of local public health departments, and the pasteurization of milk. It was now known that many

diseases were caused by microbes and that the spread of disease could be controlled through public health activities. As the public health departments were established, they were given the goal of protecting the health of the community. In order to accomplish this goal these departments were granted powers to enforce public health laws and regulations. These powers included quarantine, isolation, immunization, and investigative powers.

Public health was now ready to move to the next stage of development, which involved the effort to prevent communicable diseases and to focus that prevention on high-risk groups. The discovery of penicillin gave physicians a weapon that could be used to cure many communicable diseases. The development of vaccines allowed the virtual elimination of many childhood diseases. Public health departments became very good at organizing and implementing mass immunization campaigns, which were credited with preventing enormous morbidity and mortality from communicable diseases.

The science of epidemiology was also developing. In 1849, John Snow, a London physician, had used epidemiological techniques to discover the cause of the spread of cholera in a particular city district. Having previously studied the transmission of cholera through contaminated water, Snow surveyed households of cholera victims and traced their water supply to the Broad Street well, one of three wells being used in that area. Once the suspect well was closed at his urging, the outbreak ended.

A study conducted by Doll and Hill in the 1950s implicated the use of tobacco in causing a form of cancer rarer at that time than now, lung cancer. This study paved the way for additional chronic disease studies that linked secondhand smoke to the same deadly form of cancer. Tobacco became identified as the leading cause of death for 430,000 Americans every year. Secondhand smoke was identified as a cause of over 80,000 additional deaths from lung cancer. After Doll and Hill's study, it seemed a natural follow-up to start using epidemiology to evaluate high-risk health behaviors as a potential cause of other chronic diseases. Epidemiology was now ready to deal with diseases involving very long incubation periods that had no visible starting point.

Epidemiology has been called the basic science of public health by people who work in the field of public health, and in fact most of the major accomplishments of public health are a direct result of exhaustive studies conducted by epidemiologists. Epidemiology focuses on human populations and has been used in the determination of the causes of many chronic diseases. This science relies heavily on the use of descriptive and analytical statistics to determine the major risk factors of disease (Schneider, 2006).

One of the most important studies ever conducted involved an epidemiological evaluation of chronic noninfectious diseases in Framingham, Massachusetts. This cohort study, begun in 1947, evaluated the relation of heart disease to factors that included high blood pressure, serum cholesterol, and cigarette smoking. Oppenheimer (2005) argues that this successful epidemiological study, which coined the term *risk factor*, was also able to uncover the causes of many other chronic diseases.

The **Framingham Heart Study** was instrumental in proving the value of involving a community in a collaborative effort designed to improve the health of that

community. This was an important first step in the expansion of population-based medicine, which allowed a differentiation between the medical care system and public health departments. It also demonstrated that even when goals are different, there is real value in collaboration with others.

The next phase of public health development involved an interest in providing health care that was geared toward the community. This focus on primary care involved greater consideration of socioeconomic concepts and an evaluation of all of the determinants of good health. Public health started to move closer to the community through federal and state grants that encouraged the formation of **local health departments** with city or county health responsibilities. Public health at this time involved an increased focus on the prevention of diseases that were long term or chronic in their etiology. The country was gaining in its war against communicable diseases, and public health departments began to move resources to the control of the epidemic of noncommunicable chronic diseases. This effort began with a concentration on heart disease, stroke, and cancer. In recent years public health has also moved toward dealing with physical inactivity, diet, tobacco use, and obesity.

Public health entered the current **health promotion** era in 1979. Public health officials became convinced that population-based medicine would have a much better chance than individually focused medical care of solving the major problems found in the U.S. medical care delivery system. It also seemed obvious to some public health leaders that if we could keep individuals free of chronic diseases, we could reduce the costs of health care delivery and at the same time reduce the numbers of individuals who require access to health services. At this time prevention should have become the main focus of public health efforts, leaving the medical care delivery system to focus on cure. However, many public health professionals continued to support programs that focused on control of disease rather than on preventing disease. This failure to put the primary emphasis on prevention was a result of budget reductions and a bureaucratic structure that was unable to move beyond disease counseling and testing. A good example of this failure is found in the public health response to HIV in the early years of that disease. Public health agencies seemed to believe that counseling and testing of individuals could somehow prevent the HIV epidemic from growing. They were wrong.

HEALTHY PEOPLE 2010

Many people in the United States have long had an interest in the prevention of health problems. This interest is evident when we look at the strong support for the elimination of childhood diseases through the funding of vaccine development and distribution by public health departments. At the same time, there was also a long-term reluctance to move past the care of children and young adults with well-developed prevention programs.

Then, in 1979, the *healthy people* concept came into being, documented in a report titled *The Surgeon General's Report on Health Promotion and Disease Prevention.* This report was responsible for the start of a national discussion on the relationship of

personal health behaviors to the development of many serious diseases and injuries, and the Healthy People program represents a change from the physician and hospital emphasis on the individual to the public health focus on the population. Healthy People program objectives were then outlined in a 1990 report. The latest report, *Healthy People 2010* (U.S. Department of Health and Human Services, 2000), establishes twenty-eight broad *focus areas* for the Healthy People program (see Table 1.1). These focus areas contain 467 target objectives for communities to use in the effort to improve the health status of their residents.

TABLE 1.1.   **Healthy People 2010 focus areas**

Access	Injury/Violence Prevention
Arthritis, Osteoporosis, Chronic Back Conditions	Maternal, Infant, Child Health
Cancer	Medical Product Safety
Chronic Kidney Disease	Mental Health and Mental Disorders
Diabetes	Nutrition and Overweight
Disability and Secondary Conditions	Occupational Safety and Health
Environmental Health	Oral Health
Educational and Community-Based Programs	Physical Activity and Fitness
Family Planning	Respiratory Diseases
Food Safety	Public Health Infrastructure
Health Communication	Sexually Transmitted Diseases
Heart Disease and Stroke	Substance Abuse (including alcohol)
HIV/AIDS	Tobacco Use
Immunization and Infectious Diseases	Vision and Hearing

Source: U.S. Department of Health and Human Services, 2000.

In giving concrete goals and objectives to communities, the Healthy People initiative helps these communities to increase collaboration and to build community agreement with and support of constant improvement toward a healthier community. The objectives are tracked and reported as moving in the right direction, moving in the wrong direction, showing no change, or being untrackable. This ongoing evaluation process allows public health agencies to measure results and attempt to change community-supported programs that are not working. It is not a perfect process, but for those interested in the health of the community it represents a step in the right direction.

One of the focus areas for improvement in *Healthy People 2010*, as shown in Table 1.1, is occupational safety and health. This section has very specific, measurable objectives that employers can apply to their place of employment and motivate employees to achieve (Table 1.2 shows the areas that these objectives address).

TABLE 1.2. Healthy People 2010: short titles of occupational safety and health objectives

No.	Objective Short Title
20-1	Work-related injury deaths
20-2	Work-related injuries
20-3	Overexertion or repetitive motion
20-4	Pneumoconiosis deaths
20-5	Work-related homicides
20-6	Work-related assaults
20-7	Elevated blood lead levels from work exposure
20-8	Occupational skin diseases or disorders
20-9	Worksite stress-reduction programs
20-10	Needle stick injuries
20-11	Work-related, noise-induced hearing loss

Source: U.S. Department of Health and Human Services, 2000.

One issue that has long inhibited the accomplishment of workplace health and safety objectives has been uniting the players in the process and offering appropriate incentives to make collaboration happen. The interest is now present for the development of strong partnerships between employers and public health agencies for the improvement of the health of workers, which benefits everyone.

RESPONSIBILITIES OF PUBLIC HEALTH

The general consensus of those who work in public health is that the **core responsibilities of public health** include

- Assessing and monitoring of the health of the community in order to identify health problems and health priorities

- Developing public policies to solve identified local, state, and national health problems and health priorities

- Ensuring that all populations have access to appropriate and cost-effective care, including health promotion and disease prevention services, and evaluating the effectiveness of that care.

These responsibilities all entail prevention of disease and protection of the health of the population. They are carried out by a cadre of dedicated public health professionals working for federal, state, and local public health departments. Public health professionals' duties are usually defined in terms of minimum program requirements, and involve communicable disease control, laboratory services, health education, environmental health, epidemiology, maternal and child health services, public health nursing, and chronic disease control. (As we have noted, the word *control* does not support the development of public health efforts in prevention and indicates that there is still much to do in shifting the public health focus.)

PUBLIC HEALTH ACCOMPLISHMENTS

Public health departments have been key players in many of the great achievements of medical care over the last century. They had very little support in terms of staffing and financial resources, and they also had to be innovative within a very restrictive bureaucratic structure. Their success is a direct result of dedicated employees, a strong culture, and a desire to improve the health of the community. In addition, one of our public health departments' greatest strengths has always been the ability to partner with others in the reduction of diseases in the community. Exhibit 1.1 lists their major accomplishments.

These accomplishments that resulted from public health programs are very impressive, and they were made possible by the formation of partnerships involving community leaders, including leaders from the business community. It must also be revealed,

EXHIBIT 1.1. **Ten great public health achievements—United States, 1900–1999**

Vaccination

Programs of population-wide vaccinations resulted in the eradication of smallpox; elimination of polio in the Americas; and control of measles, rubella, tetanus, diphtheria, Haemophilus influenza type b, and other infectious diseases in the United States and other parts of the world.

Motor-Vehicle Safety

Improvements in motor-vehicle safety have contributed to large reductions in motor vehicle–related deaths. These improvements include engineering efforts to make both vehicles and highways safer and successful efforts to change personal behavior (for example, increased use of safety belts, child safety seats, and motorcycle helmets and decreased drinking and driving).

Safer Workplaces

Work-related health problems, such as coal workers' pneumoconiosis (black lung), and silicosis—common at the beginning of the century—have been significantly reduced. Severe injuries and deaths related to mining, manufacturing, construction, and transportation also have decreased; since 1980, safer workplaces have resulted in a reduction of approximately 40% in the rate of fatal occupational injuries.

Control of Infectious Diseases

Control of infectious diseases has resulted from clean water and better sanitation. Infections such as typhoid and cholera, major causes of illness and death early in the 20th century, have been reduced dramatically by improved sanitation. In addition, the discovery of antimicrobial therapy has been critical to successful public health efforts to control infections such as tuberculosis and sexually transmitted diseases (STDs).

Decline in Deaths from Coronary Heart Disease and Stroke

Decline in deaths from coronary heart disease and stroke have resulted from risk-factor modification, such as smoking cessation and blood pressure control coupled with improved access to early detection and better treatment. Since 1972, death rates for coronary heart disease have decreased 51%.

Safer and Healthier Foods

Since 1900, safer and healthier foods have resulted from decreases in microbial contamination and increases in nutritional content. Identifying essential micronutrients and establishing food-fortification programs have almost eliminated major nutritional deficiency diseases such as rickets, goiter, and pellagra in the United States.

Healhier Mothers and Babies

Healthier mothers and babies are a result of better hygiene and nutrition, availability of anti-biotics, greater access to health care, and technological advances in maternal and neonatal medicine. Since 1900, infant mortality has decreased 90%, and maternal mortality has decreased 99%.

Family Planning

Access to family planning and contraceptive services has altered social and economic roles of women. Family planning has provided health benefits such as smaller family size and longer interval between the birth of children; increased opportunities for preconception counseling and screening; fewer infant, child, and maternal deaths; and the use of barrier contraceptives to prevent pregnancy and transmission of human immunodeficiency virus and other STDs.

Fluoridation of Drinking Water

Fluoridation of drinking water began in 1945 and in 1999 reached an estimated 144 million persons in the United States. Fluoridation safely and inexpensively benefits both children and adults by effectively preventing tooth decay, regardless of socioeconomic status or access to care. Fluoridation has played an important role in the reductions in tooth decay (40%–70% in children) and of tooth loss in adults (40%–60%).

Recognition of Tobacco Use as a Health Hazard

Recognition of tobacco use as a health hazard in 1964 has resulted in changes in the pro-motion of cessation of use and reduction of exposure to environmental tobacco smoke. Since the initial surgeon general's report on the health risks of smoking, the prevalence of smoking among adults has decreased, and millions of smoking-related deaths have been prevented.

Source: Adapted from *Ten Great Public Health Achievements—United States, 1900–1999*, 1999.

however, that public health has had its share of failed programs. One of the most notable occurred in 1976 when the government's response to the reporting of one case of swine flu at Fort Dix, New Jersey, was perceived as a complete failure. A mass immunization program was instituted to protect the public from a potential epidemic, but the outbreak never materialized and the vaccinations resulted in several cases of Guillain-Barré syndrome that caused paralysis. Failures like this went a long way toward making people fear large public health interventions.

The third accomplishment listed has to do with the improvement of workplace safety, which can go a long way toward the improvement of community health.

Turnock (2009) points out that workplaces are safer today but more needs to be done to protect workers from disease and injuries. Public health departments are capable of using epidemiology and sophisticated surveillance systems to reduce injuries and develop disease screening and intervention programs. This can be accomplished only if businesses and public health work together in the reduction of illness and injuries in the workplace.

EMPHASIS ON PREVENTION NOT CONTROL

Public health is facing enormous challenges in this new century that range from communicable diseases and chronic diseases to bioterrorism. Public health departments are confronting the challenges of HIV, tuberculosis, influenza, diabetes, tobacco use, physical inactivity, and obesity. All these diseases and high-risk health behaviors have become epidemic and require the attention of public health agencies and the expansion of prevention programs. Control of disease has long been key to the function of public health programs. An example of this philosophy is found in the way public health departments approach their responsibilities concerning communicable diseases. Public health professionals assigned to work in communicable disease programs are trained in investigation techniques along with counseling skills. Their job is to find individuals infected with communicable diseases, bring them to treatment, and find their contacts, who will also be treated. In years past infected individuals could also be quarantined in order to protect the general public from infection. The problem with this strategy is that nothing has been prevented, only controlled. That is why many diseases are increasing in incidence until a serious effort is again made to control their spread among the population. This strategy never worked with communicable diseases and certainly will not work with our current epidemic of chronic diseases.

If you were alive in 1900 you could expect to live until age forty-nine. Today most of us have a life expectancy of seventy-nine years of age. This increase in life expectancy has been facilitated by successful prevention activities that were developed and implemented by public health agencies. There has been a remarkable reduction in deaths from heart disease, strokes, and many forms of cancer. Most childhood diseases have been virtually eliminated because of the expansion of immunizations. These public health initiatives have not only extended our life expectancy but in many instances have also improved our quality of life.

Great progress has also been made in the understanding of injuries and, more important, how to prevent them. In the years since the establishment of the Occupational Safety and Health Administration in 1970, progress has similarly been made in assuring safe and healthy workplaces. Nevertheless, according to the Institute of Medicine (2003), an average of 137 individuals die each day from work-related diseases and an additional 16 die from workplace injuries. The National Institute for Occupational Safety and Health (NIOSH, 2005) reports the direct and indirect costs of workplace injuries and illnesses to be $171 billion a year for all employers.

The Institute of Medicine reports that many of these costs could be avoided with greater attention being paid to worksite safety and health training and a long-term commitment to the workplace goals established by *Healthy People 2010.* Public health departments need to spend a great deal of time and effort helping small employers who do not have trained staff available to develop the required prevention programs. Smaller employers experience higher levels of workplace hazards than larger employers do. It is at this level that the development of surveillance systems and wellness programs will reap large benefits.

More effort must be made by employers and public health departments to partner with each other. Better and more frequent communication needs to occur between employers and public health agencies housed in the community. **Evidence-based prevention programs** that promote workplace health and safety and that are cost effective and produce the desired results need to be developed. Such collaboration efforts can go a long way toward improving workers' health and making employers more productive. Employers and public health agencies make up a winning partnership, and the time for implementation is now.

This country and its medical care system have never placed a great emphasis on the value of prevention programs. In fact a large number of individuals have argued that prevention programs are not worth what they cost. They also point out that it is virtually impossible to prove the value of programs that prevent because one cannot prove that without the intervention something bad would have happened. Cohen, Neumann, and Weinstein (2008), for example, argue that the use of preventive measures can cost more than they save. But whether or not a preventive measure is a good investment is dependent on the type of intervention and the population using the intervention. This is why it is so important to fund research to determine whether an intervention is highly effective at avoiding higher costs at a later time or whether our resources should be devoted to finding a cure. This is essentially the rationale for public health to develop best practices for preventive care procedures. Fleming (2008) argues that we need to do much to gather the best data we can about the best clinical practices. He believes that such data have not become available because of a financing mechanism that does not reward evidence-based practice.

The Trust for America's Health (2008) reports that the evidence is now pointing to the value of prevention in saving and improving lives and also in reducing the escalating costs associated with health care delivery in this country. The Trust for America's Health believes that investing $10 per person each year on proven prevention efforts, such as increased physical activity, improved nutrition, and smoking cessation programs, could result in a savings of $16 billion annually within five years. This represents a $5.60 return for every $1.00 invested.

Turnock (2009) argues that the use of certain policies and programs can also reduce health risk and ultimately improve the health of the 141 million full-time and part-time workers in this country. The Task Force on Community Preventive Services has begun a systematic review of the programs that work best in promoting healthy behavior and ultimately improve the health of employees.

PUBLIC HEALTH AND OCCUPATIONAL HEALTH

Workplace accidents and violence can be reduced through the use of epidemiology so that causes can be determined and prevention strategies can be developed and implemented. Chronic diseases that are developing in a large number of workers as they age and many of the high-risk health behaviors that are developed and continued during the working years can be slowed or prevented through workplace health education and health promotion programs.

The value of public health in such efforts is that these agencies have the expertise and incentive to work with OSHA and NIOSH to keep the workplace healthy and free of disease and injuries. In the past there has been very little interest by public health departments in forming partnerships with employers in developing workplace wellness programs. That attitude is changing as employers seek health promotion from public health agencies and public health agencies actively pursue the goals put forth by *Healthy People 2010.*

The workplace offers the ideal opportunity to keep people healthy. Workers usually spend forty hours a week or more in their place of employment, and they are a captive audience for many health promotion activities. This captive audience could receive health promotion information at the workplace, screening programs to detect disease at an early stage, and employer-provided incentives for employees and their families to stay healthy.

Awofeso (2004) argues that health promotion has three components: education, prevention, and protection. These are the components that can ensure a safe and healthy workforce. Satcher (2006) points out that the current epidemic of overweight and obesity is causing Americans to reverse all the life-span increases achieved in the past one hundred years.

The increasing cost of health care is threatening the very survival of many businesses in the United States. As governor of Arkansas, Mike Huckabee (2006) argued that wellness programs provided in the workplaces of America would result in a more cost-efficient workforce that would improve this country's productivity and its ability to become competitive with other countries. Huckabee wanted state governments to encourage wellness programs for their employees and serve as a role model for other employers.

Benjamin (2006) calls for the business community to develop a relationship with public health departments to improve the business climate and build a more productive workforce. Employers and public health departments have to work together as wellness partners. If this can be achieved, the result will be a reduction in health care costs and an improved economic climate. These opportunities must be exploited by employers and public health and the time is now.

Schulte et al. (2007) point out that obesity and workplace risks may be related. Research is needed to explore the relationship of the work environment to the development of obesity and the extent to which obesity may increase the risk of occupational disease and injury.

Table 1.3 shows the leading causes of death in the United States in 2001. According to the Centers for Disease Control and Prevention (CDC), chronic diseases (italicized in Table 1.3) claimed the lives of more than 1.7 million Americans and were responsible for seven out of ten deaths in 2001. These diseases account for 70 percent of the $2 trillion bill for medical care in this country. These diseases are also preventable if high-risk health behaviors are eliminated or never begun. The use of tobacco is one of the high-risk health behaviors instrumental in causing many of these chronic diseases.

Tobacco use by workers is clearly one of the most important triggers of worker illness, disability, and death in this country. It is also linked with a tremendous loss of productivity and loss of wages in the workforce. There is no doubt that this dangerous product is responsible for a dramatic reduction in the profits of many companies in

TABLE 1.3. **Most common causes of death, United States, 2001**

Condition	Rate
Diseases of the heart	246.8
All cancers	195.6
Stroke	57.7
Chronic lower respiratory diseases	43.6
Unintentional injuries	35.5
Diabetes mellitus	25.2
Influenza and pneumonia	21.8
Alzheimer's disease	19.0
Nephritis and nephrosis	13.9
All other causes	192.4

Note: Rates are age adjusted to the 2000 total U.S. population. Italics indicate chronic disease or condition.
Source: Centers for Disease Control and Prevention, 2005.

America, and many companies are not even aware of the loss. The CDC reports ("Annual Smoking-Attributable Mortality . . . ," 2005) that smoking cost the nation about $92 billion in the form of lost productivity in the years 1997 to 2001, up from $10 billion from the annual mortality-related productivity losses for the years 1995 to 1999. The new lost productivity estimate combined with smoking-related health care costs (reported at $75.5 billion in 1998) exceeds $167 billion per year. This represents an enormous loss in profits for American businesses.

There are only two ways to reduce consumption of this deadly and costly product in the workplace: regulation of the use of tobacco in the workplace and development of workplace smoking cessation programs that include education and therapy. Employers are not doing a good job currently of providing recommended preventive care. In fact, less than 10 percent of employers offer optimal coverage for smoking cessation programs. However, Harris, Cross, Hannon, Mahoney, and Ross-Viles (2008) point out that employers are potential partners with public health in preventing chronic disease for a number of reasons. These reasons for partnering include

- Employers' power over workplace environments

- Increases in health care costs and decreases in worker productivity because of illness

- Employers' control over whether health insurance covers preventive care aimed at avoiding chronic diseases and their potential complications

Tables 1.4, 1.5, and 1.6 display information about a study conducted by Harris et al. (2008) that made use of Workplace Solutions, a program developed by the American Cancer Society. This program attempts to increase employers' use of fifteen evidence-based practices (divided into five categories) to prevent or control chronic diseases among employees. The study involved eight employers in the Pacific Northwest, and it found that Working Solutions resulted in a large increase in the employers' use of evidence-based best practices aimed at the prevention of cancer and other chronic diseases in their places of employment. The largest change involved the increased use of tobacco cessation treatment in the workplace, which can result in a significant reduction in cancer and other chronic diseases. The use of cancer-screening programs also improved significantly.

Tobacco cessation programs provided in the workplace can result in a tremendous reduction in the rate of smoking by employees and offer employers the opportunity to have a considerable positive impact on the health of their employees. Help from public health professionals can represent the difference between success and failure in such workplace wellness initiatives. Harris et al.'s study offers a good example of how collaboration between public health professionals and employers can have a significant impact on the implementation of evidence-based prevention programs in the workplace.

TABLE 1.4. Employer chronic disease prevention best practices, by practice type, eight Pacific Northwest employers, American Cancer Society Workplace Solutions Pilot Study, 2005–2006

Practice Type	Best Practice	Relevant Community Guide Recommendation(s)	Relevant USPSTF Recommendation(s) and Prevention Priorities [CPB/CE/Total Score]
Insurance benefits	1. Provide full coverage for tobacco cessation treatments, including prescription medications, over-the-counter nicotine replacement therapy, and counseling.	Reduce out-of-pocket costs for tobacco cessation.	Tobacco-use screening and cessation intervention [5/5/10]
	2. Provide full coverage for breast, cervical, and colon cancer screenings.	Reduce out-of-pocket costs for breast cancer screening.	Breast: mammography [4/2/6]; cervical: Pap smear [4/3/7]; colorectal: any of 4 tests [4/4/8]
	3. Provide full coverage for influenza vaccination.	Reduce out-of-pocket costs for vaccinations.	Annual vaccination for adults age 50 and older [4/4/8]
	4. Require health plans to send reminders to members and network providers about preventive health services.	Provide client and provider reminders for breast, cervical, and colon cancer screening and influenza vaccination.	
	5. Require health plans to track delivery of preventive health services and send performance feedback to network providers.	Assess providers' delivery of recommended cancer screenings and influenza vaccination and give feedback.	

(continued)

TABLE 1.4. Employer chronic disease prevention best practices, by practice type, eight Pacific Northwest employers, American Cancer Society Workplace Solutions Pilot Study, 2005–2006 (continued)

Practice Type	Best Practice	Relevant Community Guide Recommendation(s)	Relevant USPSTF Recommendation(s) and Prevention Priorities [CPB/CE/Total Score]
Workplace policies	6. Ban tobacco use at worksites.	Use smoking bans and restrictions (to reduce environmental smoke).	
	7. Post "Use the Stairs" reminder signs near elevators.	Use point-of-decision prompts to increase physical activity.	
	8. Provide facilities for physical activity.	Enhance access to physical activity facilities, in combination with informational outreach.	
	9. Make healthy food choices available and affordable.	Offer multicomponent interventions aimed at diet, physical activity, and cognitive change.	
	10. Require and provide sun protection for employees who work outdoors.	(Insufficient evidence for required use in occupational settings, but recommended for adults in recreational settings.)	Currently under review by USPSTF

Workplace programs	11. Sponsor a tobacco cessation quit-line, including nicotine replacement therapy.	Offer multicomponent interventions that include client telephone support to increase tobacco cessation.	Tobacco-use screening and cessation intervention [5/5/10]
	12. Provide annual influenza vaccination on site.	Enhance access to vaccinations, in combination with intervention to increase community demand.	Annual vaccination for adults age 50 and older [4/4/8]
	13. Offer a workplace physical activity program.	Encourage individually adapted health behavior change to increase physical activity.	
Tracking	14. Survey employees' health behaviors to track effectiveness of health promotion efforts.	NA	
Communication	15. Conduct targeted health promotion campaigns, focusing on key health behaviors and use of preventive health care.	Offer multicomponent interventions to increase breast and cervical cancer screening and vaccination; provide small media and one-to-one education to increase breast cancer screening.	

TABLE 1.5. Employer characteristics and chronic disease prevention best practice scores at baseline and follow-up, eight Pacific Northwest employers, American Cancer Society Workplace Solutions Pilot Study, 2005–2006

Employer	Industry	Number of Employees	Best Practice Implementation Score at Baseline, %	Best Practice Implementation Score at Follow-Up, %	Change in Implementation Score, Percentage Points
1	Financial	51,000	43	85	42
2	Retail trade	11,712	58	58	0
3	Government	13,000	42	59	17
4	Agriculture	7,500	33	56	23
5	Manufacturing	8,710	27	75	48
6	Government	115,522	37	52	15
7	Retail trade	45,000	23	37	14
8	Manufacturing	12,390	39	71	32

Note: Best practice scores calculated by adding the scores for all best practices and then dividing by the total number of best practices (14 was the denominator for employers without outdoor workers, because best practice 10 [promote sun protection] was not applicable to them; 15 was the denominator for employers with outdoor workers).

Source: Harris et al., 2008.

TABLE 1.6. Implementation rates of chronic disease prevention best practices at baseline and follow-up, eight Pacific Northwest employers, American Cancer Society Workplace Solutions Pilot Study, 2005–2006

Best Practice	Mean Implementation Score at Baseline, % (95% CI)	Mean Implementation Score at Follow-up, % (95% CI)	Mean Change in Implementation Score, Percentage Points (Range)	p Value
1. Cover tobacco cessation treatment	35 (14–56)	66 (35–97)	31 (0–75)	.03
2. Cover recommended cancer screenings	78 (71–86)	96 (88–100)	18 (0–25)	.03
3. Cover influenza vaccination	69 (44–93)	88 (76–99)	19 (0–100)	.25
4. Send preventive services reminders	0	38 (0–81)	38 (0–100)	.25
5. Track delivery of preventive services	0	50 (0–95)	50 (0–100)	.13
6. Have a tobacco ban	72 (46–98)	72 (46–98)	0	1.00
7. Have "Use the Stairs" signs	13 (0–42)	25 (0–64)	12 (0–100)	1.00
8. Provide physical activity facilities	63 (28–97)	71 (39–100)	8 (0–33)	.50
9. Provide healthy food choices	31 (0–62)	50 (11–89)	19 (0–100)	.63

TABLE 1.6. Implementation rates of chronic disease prevention best practices at baseline and follow-up, eight Pacific Northwest employers, American Cancer Society Workplace Solutions Pilot Study, 2005–2006 (*continued*)

Best Practice	Mean Implementation Score at Baseline, % (95% CI)	Mean Implementation Score at Follow-up, % (95% CI)	Mean Change in Implementation Score, Percentage Points (Range)	p Value
10. Promote sun protection	0	0	0	NA
11. Have a tobacco cessation quit-line	25 (0–64)	63 (19–100)	38 (0–100)	.25
12. Provide on-site influenza vaccination	63 (29–96)	81 (52–100)	18 (0–100)	.25
13. Have physical activity programs	25 (0–64)	63 (19–100)	38 (0–100)	.25
14. Track employee health behaviors	25 (0–64)	50 (5–95)	25 (0–100)	.50
15. Use health promotion campaigns	30 (5–55)	50 (23–77)	20 (0–100)	.22
Total best practice score*	38 (29–47)	61 (49–74)	23 (0–48)	.02

Notes: NA, not applicable. Best practices scored from 0 to 1.00. Means rather than medians presented for ease of interpretation of change in scores from baseline to follow-up. *p* values derived from two-tailed nonparametric sign tests.

*Calculated by adding the scores for all best practices and then dividing by the total number of best practices (14 was the denominator for employers without outdoor workers, because best practice 10 was not applicable to them; 15 was the denominator for employers with outdoor workers).

Source: Harris et al., 2008.

SUMMARY

Public health departments have a long history of developing and implementing programs that are successful in reducing morbidity and mortality from disease. In recent years, public health has proven its value in responding to the epidemic of chronic diseases in our country. Our cost crisis in health services and our need to reorganize medical care delivery are providing a unique opportunity for public health to assume a leadership role in the new system of health care. Expertise in the development of prevention programs is necessary if we are to succeed in delivering good health to all Americans at a cost we can afford. Nowhere is the need for prevention greater than in the workplaces throughout the United States.

There is a need for programs with a proven record of success in the prevention or postponement of the development of chronic diseases. The workplace is an ideal location for the development, implementation, and evaluation of evidence-based prevention programs. It has large numbers of people who are in the right age group to benefit greatly from successful prevention programs. And the employer has an incentive to keep employees healthy and free from diseases and injuries—increased productivity and profits.

Public health needs to form partnerships with employers in order to keep workers healthy. Public health has the prevention expertise, and employers have the captive audience along with additional resources needed to make health promotion efforts a success. The opportunities can be seen in highly successful smoking cessation programs. Elimination of tobacco use by workers will go a long way toward the reduction of many of the costly chronic diseases that are now epidemic in the United States.

KEY TERMS

core responsibilities of public health
evidence-based prevention programs
Framingham Heart Study

health promotion
local health departments
population-based medicine

QUESTIONS FOR DISCUSSION

1. Why do public health agencies and employers have an interest in forming partnerships to deal with the epidemic of chronic diseases in the United States? Name and explain the reasons.

2. What are some of the greatest success stories of public health departments?

3. How can epidemiology, along with the development of disease and injury surveillance systems, keep workers healthier and more productive?

4. What is an example of a public health function that would help employers improve the health and safety of their employees?