chronic disease notes & reports

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1997 AHA Connor Memorial Lecture

Reducing the Burden of Cardiovascular Disease: CDC Strategies in Evolution

[Editor's note: This version of the Lewis A. Connor Memorial Lecture, delivered by David Satcher, MD, PhD, Director, CDC, at the 1997 annual meeting of the American Heart Association has been edited to fit this format.]

At CDC, we take very seriously the value of prevention. So seriously that we added "prevention" to our name in 1992. There is perhaps no more clear example of the opportunity for prevention to play a key role in lessening the burden of chronic disease than in the area of cardiovascular disease (CVD). Among both men and women, and across all racial and ethnic groups in all 50 states, CVD is our nation's leading killer—it kills more than 950,000 Americans every year or 2,600 Americans every day. That's more than 40 percent of all deaths occurring in the United States. Furthermore, as the leading cause of death for all people between the ages of 45 and 75, CVD contributes significantly to premature death in this country.

CVD has a profound impact not only on our nation's health care system but also on our economy: its current economic burden in the United States is estimated to be almost $260 billion per year.

These figures do not begin to tell the story of diminished quality of life and productivity caused by heart disease. About 57 million Americans, almost one-fourth of our population, live with some form of this chronic disease. For them, physical activity and independence can be severely limited.

Those of us in public health know that prevention works. For proof, we must only look to the model of immunization: a $32 million smallpox eradication

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Late-Breaking News: Congress Approves Funding for CDC's CVD Prevention Program

Congress has recently appropriated $8.1 million in funding for the prevention of cardiovascular disease. With these resources, the Centers for Disease Control and Prevention will fund grant programs for state-based cardiovascular disease prevention efforts. The appropriated funding, though limited, provides the basis on which to build a comprehensive and integrated program in every state to target this disease and its risk factors.

CDC and its partners will draw from existing activities and programs to build a comprehensive, national CVD prevention program.

Special Focus: Cardiovascular Disease

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Disease Control and Prevention

Commentary Commentary Commentary

Commentary: If Not Now, When? Cardiovascular Disease and Public Health

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Cardiovascular disease (CVD) is the leading cause of death among men and women in all states for all racial and ethnic groups. It is the leading cause of death for adults over the age of 44. Moreover, it is the chief cause of excess deaths in the minority populations when compared with majority populations.

Based on burden and preventability, one would expect strong nationwide comprehensive and integrated programs to reduce the incidence of heart disease and stroke in all states and local health agencies. Yet we find relatively few dedicated resources in public health for CVD with a limited number of states dedicating portions of their Preventive Health and Health Services Block Grant to CVD and its major risk factors. The lack of a nationwide heart health program that involves state health departments and links research agencies and universities and key voluntary organizations reflects in many ways the overall context of chronic disease prevention in public health practice. That is, public health agencies do not have significant resources devoted to chronic disease prevention and health promotion.

Separate reports, first in 1989, and more recently in 1996, indicate that less than 3 percent of the resources available to state health agencies are directed toward prevention and control of chronic disease. Recently, there has been some degree of change, best illustrated by the increased availability of dollars from tobacco tax initiatives supporting strong tobacco control efforts in a few states.

A 1997 *Journal of the American Medical Association* article concluded that recent declines in heart disease resulted largely from advances in therapy and technology, not from prevention efforts. The analysis was cogent and based on reasonable assumptions; however, keep in mind that it described what has occurred, not what was possible. An analysis published in a fall 1997 issue of the *American Journal of Public Health* shows that about two-thirds of the differences in mortality rates across states from heart disease among persons less than 74 years of age are associated with differences in behaviorally related risk factors such as tobacco use, physical inactivity, obesity, and cholesterol. This study strongly indicates that large improvements in the rates of CVD are likely to follow if public health efforts to change behaviors are substantially strengthened.

The American public and many policy leaders do not have the same sense of dread about CVD or its risk factors as they do about other issues in public health. Within the chronic diseases, probably only cancer is really feared by the public at large. For many persons, heart disease and stoke are considered diseases of old age and are even considered as "the nearly painless way to go" in ones sleep. People fail to realize the young age at which many deaths occur or even that heart disease, stroke, and hypertension are among the leading causes of long-term disability among adults.

Recent reports have shown the slowing decline in tobacco use, the possible down turn in the rate of blood pressure control in persons known to be hypertensive, and increasing rates of obesity. Such trends suggest that continued declines in CVD mortality will require substantially increased efforts before adults initiate and maintain healthful behaviors and that this behavior change will require much wider application of community approaches, both to enlist those at high risk and to enable the public at large to make the behavior changes necessary. The unrealized potential from mediating the effects of well-known risk factors should give us pause. Providing information is not enough for people to sustain behavior change. We must also systematically apply the advances in behavioral science made during the past few decades.

As we prepare for this challenge, we have to incorporate newly recognized and emerging risk factors such as sense of depression or hopelessness, hypercoagulability and aspirin, and genotype. But these issues must also be linked to the recognition that we have not come nearly far enough in our public health efforts to manage the behavior risk factors with which we are already very familiar.

Connor Lecture

► *Continued from page 1*

program now saves that amount every 26 days. Yet there is no state-based program for the prevention of CVD. CDC hopes to establish, with the help of our partners, a program that will focus on low-cost, effective primary and secondary prevention interventions targeted at both geographic and demographic areas with a disproportionate burden of CVD.

As we enter the 21st century, we are hopeful about a future where public health and the medical care and research communities work together to tackle the burden of CVD. But we also have reason to be deeply concerned. CDC surveillance data show that the progress to date in reducing ischemic heart disease and stroke deaths may be slowing, suggesting the need for innovative approaches. We need to give increased attention to emerging risk factors, such as infectious agents, and to environmental and policy changes, to address CVD head-on. We must also direct our collective energies toward preventing CVD, not only to save lives, but to dramatically improve the quality of those lives saved.

Well-Known CVD Risk Factors

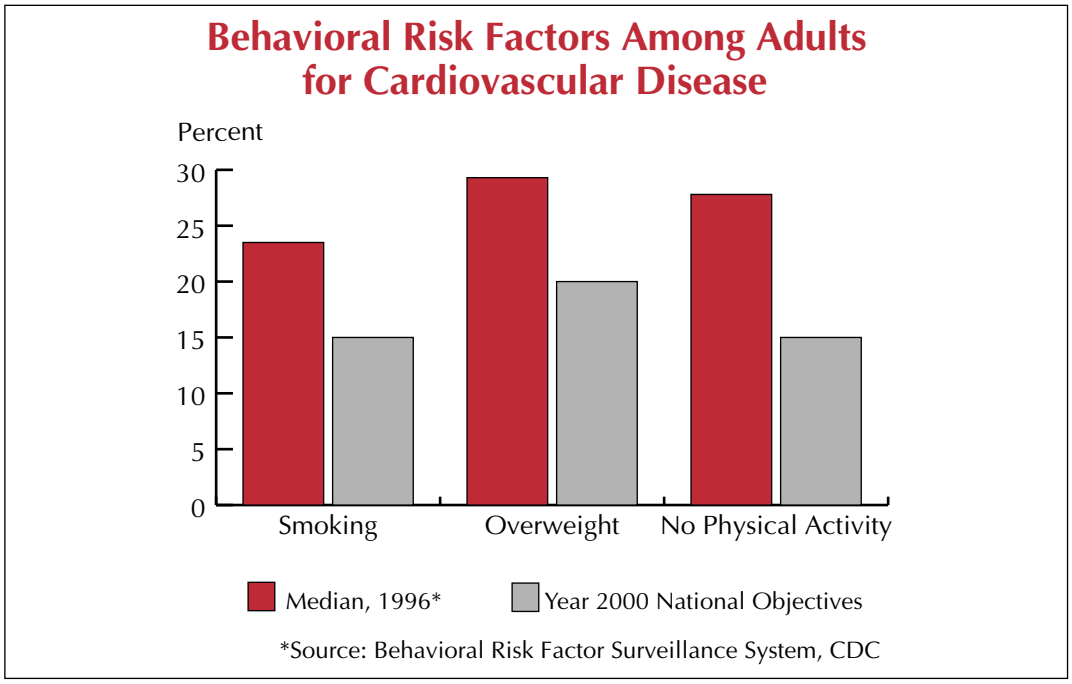
Research clearly shows relationships between CVD and three risk factors: cigarette smoking, physical inactivity, and poor nutrition.

Cigarette smoking—One-fifth of deaths related to heart disease are due to cigarette smoking. Smoking by itself doubles the risk of heart disease. Of the 2.1 million persons in the United States who died of smoking-related diseases from 1990 to 1994, 43 percent—591,121 men and 315,313 women—died of CVD.

According to the 1990 *Surgeon General's Report on the Health Benefits of Cessation* quitting smoking has major and immediate cardiovascular health benefits for men and women of all ages:

- excess risk of coronary heart disease is reduced by about half after 1 year of abstinence and then continues to decline gradually.
- smoking cessation markedly reduces the risk of recurrent infarction and death among persons with diagnosed coronary heart disease.

Unfortunately, tobacco use is not a health problem limited to adults. Each day in the United States, more than 3,000



young people become regular smokers, accounting for more than 1 million new smokers a year. Regardless of age, sex, or race, teenage smoking rates have increased each year since 1992. In 1996, 22.2 percent of high school seniors smoked daily—up from 17.2 percent in 1992. Among students in grades 9–12, past-month smoking increased from 27.5 percent in 1991 to 34.8 percent in 1995. Past-month smoking increased most dramatically among male African-American high school students—nearly doubling from 14.1 percent to 27.8 percent between 1991 and 1995.

Preventing young people from starting to smoke cigarettes must be a priority, and we must do more than pass laws forbidding sales of tobacco to underage youths. A Massachusetts study published in October 1997 in the *New England Journal of Medicine* showed that even when more than 80 percent of vendors obey the law and don't sell tobacco to minors, our children have no problem getting and smoking cigarettes.

To stop tobacco-related heart disease in future generations, we must

- support combined school, community, and media efforts to educate youths about the physical and social consequences of tobacco use and to promote cessation services for young people.
- provide funding to states and national organizations to help develop or strengthen their capacity to educate and mobilize communities, particularly young people, about the dangers of tobacco use.
- find ways to empower young people and their families. Through programs such as media literacy, we can help young people see through advertising that suggests smoking is cool.

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Physical Activity—We could make tremendous inroads against CVD if we could increase physical activity in our population. Many studies have shown that our sedentary lifestyles double our risk of heart disease. Unfortunately, the data tell us that neither our adults or children are going in the right direction:

- data from CDC's Behavioral Risk Factor Surveillance Survey show that almost 30 percent of American adults report **no** leisure time physical activity, and the picture is even worse among Hispanics and people living in the South. Fully 60 percent of all U.S. adults do not get the recommended amount of physical activity.
- nearly half of young people aged 12–21 years are not vigorously active on a regular basis. The percentage of children and adolescents who are overweight has more than doubled in the past 30 years. Equally disturbing is that participation in daily physical education among high schoolers is declining dramatically—down from 42 percent in 1991 to 25 percent in 1995.

The good news is that 30 minutes of moderate physical activity—such as brisk walking—5 or more days of the week provides substantial health benefits. Furthermore, moderate physical activity may be easier for most people to begin and maintain than vigorous activity, and the risk of cardiac complications may be reduced.

Some of us must go beyond moderate physical activity levels to qualify for certain careers. For example, public safety officers and members of the military must pass fitness tests for employment. *USA Today* reported on October 20, 1997, that the U.S. Army is spending millions in training dollars to get today's young recruits into good physical condition. The Army told *USA Today* that the number of recruits who wash out in boot camp is up 70 percent in the past 10 years, a fact that the Army attributes to "French fry eating, computer-hooked 'mouse potatoes' just arrived from high schools where tight budgets have cut physical education classes and labor means tapping a finger

on a fast-food cash register." One Army psychologist said, "This is one of the first times in history that the physical conditioning of parents is better than that of incoming soldiers."

Others of us may participate in vigorous activities because we find them fun or because they afford even greater health benefits than does moderate physical activity. We certainly aren't suggesting that people limit themselves to moderate physical activity if they can and want to exercise vigorously.

Barriers to Physical Activity

A very real barrier to physical activity is fear for personal safety. Communities can help ease such fears by working with partners to develop safe environments for physical activity. For example, at Hoover High School in the inner city of San Diego, students and members of the community have developed a fitness center open to students, school staff, and the whole community after school hours. In east Los Angeles, the Hollenbeck Youth Center offers health, physical activity, and sports programs to youths at risk of being involved in gangs and crime. Children who come to the center learn that sports and other types of physical activity are alternatives to violence in the community and they're encouraged to take that message home.

We also need to enlist the help of our nation's city planners. Take a walk in many U.S. cities, and you'll find that street sign placement favors cars over pedestrians. For example, on several one-way streets in downtown Atlanta, pedestrians unfamiliar with the city must cross the street and turn around to see the name of the street they are on.

Let's keep in mind that doctors' influence on their patients' levels of physical activity is documented. Results of the 1990 National Health Interview Survey show that when people with high blood pressure were advised by their doctors to get regular exercise, most of them did.

Prevention at a Crossroads

Death rates from coronary heart disease decreased dramatically during the 1960s and 1970s, with slower declines occurring during the 1980s (as reported in the February 19, 1997, *Journal of the American Medical Association*). Recent data for the 1990s indicate that the rate of decline in deaths as a result of coronary heart disease continues to slow; stroke mortality rates have stayed constant over the past 5 years; and mortality rates for heart failure are on the rise. There are also large disparities in rates of CVD by region, sex, and race/ethnicity. Those of us in public health, who conduct applied research and develop pilot programs in at-risk populations, must work with you, the practitioners, to ensure that we all work together in prevention of CVD.

We are at a crossroads in CVD prevention. The slowing of the rate of decline in heart disease deaths may mean that further progress in reducing these deaths is in jeopardy. It's possible that the amazing technological advances in treatment of CVD have taken us to this point, but we now must ensure that prevention messages reach our at-risk populations. New approaches are needed to prevent heart disease and proven programs and policies need to be strengthened.

More money is also needed. In April 1997, CDC reported findings from a survey of states about public health spending on chronic disease prevention, which includes CVD. We reported that although the nation is spending $425 billion in medical care dollars to treat chronic diseases, per capita public health expenditures for chronic disease prevention and control are only $1.21.

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Who Is at Risk?

I've outlined the major risk factors for CVD. We also need to pay attention to who's at risk. Within the United States and other developed countries, some groups carry a disproportionate burden of heart disease: black Americans, persons

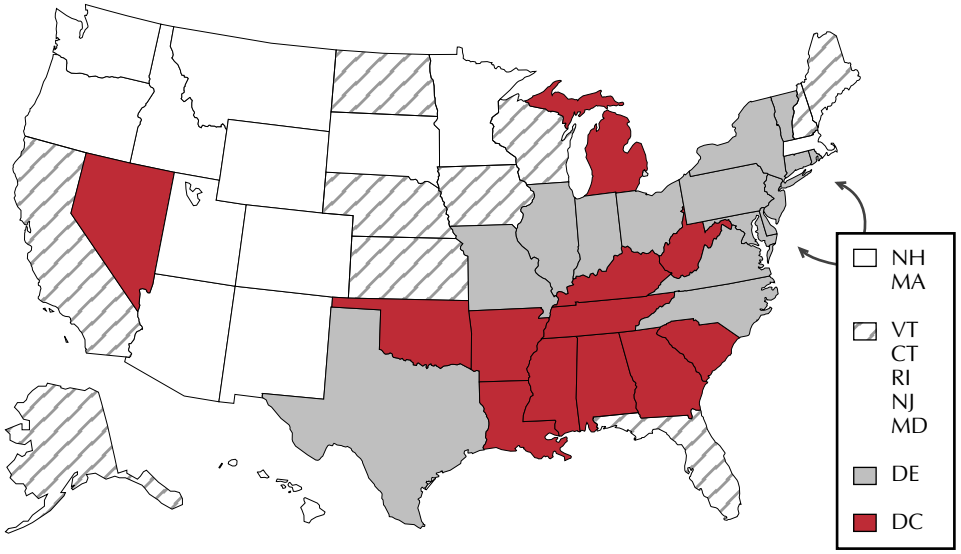
with diabetes, and persons living in southern states, among others. Contributing factors include socioeconomic status and restricted access to health care and education.

Only recently have women been identified as an at-risk population for CVD. However, they often perceive themselves as being at little risk. In a 1997 American Heart Association survey of 1,000 women, only 8 percent saw heart disease and stroke as the number one threat to their health. Sixty-one percent felt that cancer was the biggest threat to their health, although twice as many women die of heart disease as of all forms of cancer. CDC is currently involved in a number of projects targeted at women at risk of CVD.

One effort that shows great promise is part of CDC's Breast and Cervical Cancer Early Detection Program. Because many women believe that they are at higher risk of developing breast cancer than heart disease, this effort attempts to demonstrate the feasibility and effectiveness of providing CVD risk factor screening and interventions within the National Breast and Cervical Cancer Early Detection Program—a nationwide program aimed at screening and tracking uninsured and underinsured women for breast and cervical cancer. In fiscal year 1995, Congress provided money to support three such projects.

The combined program was named WiseWoman (**W**ell-**I**ntegrated **S**creening and **E**valuation for **Wo**men in **M**assachusetts, **A**rizona, and **N**orth Carolina). Interventions such as increased physical activity and improved dietary habits to lower cholesterol and blood pressure levels are being provided to about half of the participants. Their results will be compared with those of women not receiving the interventions. Within the first year, about 4,000 uninsured and low-income women aged 50 years and older have been screened for CVD risk factors. In one state program, 75 percent of participants have been found to have either high blood pressure or high cholesterol. These early results indicate that CVD risk factor screening and intervention can be a natural

Total Cardiovascular Disease Deaths, 1995



Age-adjusted death rates per 100,000 to 1970 total U.S. population

201.3–240.0 242.5–256.4 259.5–286.6 287.7–343.1

Source: National Center for Health Statistics, CDC

fit with our National Breast and Cervical Cancer Early Detection Program.

I mentioned earlier that women perceive themselves as being at much greater risk for breast cancer than heart disease, although the opposite is true. People in general fear cancer much more than heart disease despite what statistics show. A significant challenge is to figure out how to get people to fear heart disease as much as they fear cancer. Arguably, people have much more control over risk factors for heart disease—smoking, nutrition, and exercise—than they do risk factors for cancer.

Multisectoral Approach

Simply focusing on treatment doesn't make a dent in the economic, social, and personal costs of CVD. Neither can we simply focus on prevention. Our ultimate success depends on our ability to work together and develop a multisectoral approach to prevention and treatment.

Reducing the emotional, physical, financial, and social costs of CVD will take the combined efforts of public health and medical professionals, communities, schools, businesses, employers, and the media. Living proof that such a multisectoral approach works can be found in eastern Finland. A little more than 20 years ago, residents of North Karelia petitioned health officials to help them reduce their extremely high levels of heart disease.

The comprehensive intervention that resulted included health professionals; communities, including schools; food manufacturers; and supermarkets. It initially emphasized smoking, high blood pressure screening, and serum cholesterol levels, and subsequently also focused on physical activity, weight loss, diabetes management, psychological factors, and alcohol consumption. As a result of the intervention

- the number of deaths due to heart disease dropped by 73 percent.
- cholesterol levels in children dropped by 15 percent.
- residents doubled their consumption of vegetables.
- social costs decreased by $100 million for residents younger than 35 years and by $600 million for those aged 35–64.
- the age at which teenagers started smoking was delayed.

Effective prevention must begin early. Every child in this country deserves a school curriculum that includes information about nutrition, physical activity, and tobacco use and opportunities to see us practicing what we teach. Only through early intervention at many levels—schools, communities, worksites—will we achieve reductions in heart disease.

So far I've talked about the factors that we know cause CVD, who's at risk, and what kind of comprehensive state-based prevention system we might develop. We must also consider the fact that we will not always be able to prevent CVD, so we need to devote more attention to secondary prevention measures. What are people doing after they have heart attacks? Are they following suggestions, sometimes orders, to change their diets, exercise more, and take their daily aspirin and other medications?

"Every child in this country deserves a school curriculum that includes information about nutrition, physical activity, and tobacco use and opportunities to see us practicing what we teach."

International Perspective

As a leader in CVD prevention and treatment, we must not forget that we are part of a larger world and have some responsibility for helping developing nations to avoid our current problems. Although we and other developed countries have achieved declines in deaths related to heart disease, there are alarming signs that developing countries may be doomed to repeat our mistakes if steps aren't taken quickly.

Recently, our colleagues at Harvard University and the World Health Organization have assessed for 1990 and into the 21st century mortality and disability related to diseases, injuries, and risk factors. In 1990, ischemic heart disease

and cerebrovascular disease were the number one and two leading causes of death in the world; ischemic heart disease caused more deaths than any other disease or injury, and 57 percent of those deaths were in developing countries; ischemic heart disease was number 8 of the top 10 leading causes of disease burden in the developing world. In 2020, ischemic heart disease is projected to be the number one leading cause of disease burden.

The primary reasons for these increasing rates of CVD, although they are influenced by varying social and cultural norms, are the same as those we face in the Western world: high-fat and high-sodium diets, cigarette smoking, lack of exercise, and alcohol abuse. Certainly the United States cannot escape substantial blame for the continued increase in smoking. It was estimated in 1992 that 10 percent of the world's peoples alive at that time—450 million people—will die prematurely from cigarette smoking and tobacco use. We must do what we can through international forums and other collaborations to prevent CVD from gaining a stronghold in developing countries.

Call to Action

Much of the work that will provide the answers to CVD prevention has been done. Now we must come up with sound public health policy that leads to effective community programs. CDC feels very strongly that we must build a state-based prevention program for CVD. We already have successful state-based programs for diabetes and breast and cervical cancer. These efforts have taken considerable time. Developing a national diabetes strategy took a decade, but it has been well worth the effort. As a result, we have refined guiding principles for what such a program should include. We believe that a state-based prevention program for CVD

- must be driven by science.
- should target high-risk populations.
- should not deliver direct patient care but rather influence the health care delivery system to improve access to high-quality care.
- should first develop basic core capacity and then expand.
- should include the input of our partners in the private sector, including the American Heart Association.

The success of such a program depends on committed community involvement. For example, CDC's Prevention Research Center at St. Louis University has established local "heart health" coalitions for reducing risk factors and promoting policy changes in rural communities. In New Madrid County, Missouri, the Bootheel Heart Health Coalition members meet regularly to prevent smoking and promote exercise and a heart-healthy diet. We need more projects like this to help us reach individuals with a variety of needs and barriers throughout our country.

A comprehensive state-based CVD control program would build on expertise in the program, science, and policy areas to control the burden of CVD. We would build this program by

- using CDC data collection and surveillance to determine the burden of CVD in each state.
- identifying specific risk factors in each state.
- developing and testing interventions to prevent CVD.
- implementing state-based CVD programs.

Our aim is to see our current focus on certain populations of at-risk individuals expand so that a spectrum of populations is being targeted, with the ultimate result being that we address CVD prevention across the entire life cycle and among men and women of all races and ethnicities, in states and communities across the United States. We must reduce the enormous burden of CVD with cost-effective programs that not only save lives, but substantially improve the *quality* of the lives saved.

Cardiovascular Disease: Burden and Risks

Associated Burden

Despite the many steps made during the past 50 years in preventing the burden of CVD—for instance a 53 percent drop in deaths from heart attacks from 1950 to 1989—more people still die of CVD than from any other single cause of death. This burden continues to take a heavy toll on our nation's health and well-being and our economy. Consider that

- CVD is the number one killer of both men and women of all racial and ethnic groups.
- CVD is the leading cause of death among people between 35–74 years of age.
- Since 1900, CVD has been the leading cause of death in the United States in every year except for 1918 (the year of the pandemic flu outbeak).
- More than 2,500 Americans die each day of CVD.
- Total CVD (principally ischemic heart disease and stroke) accounts for more than 40 percent of all deaths in the United States, killing more than 950,000 people in 1995.
- At least 50 million Americans have some form of CVD, including hypertension.
- Deaths from congestive heart failure have been increasing during the past decade, and an estimated 400,000 new cases are diagnosed each year.
- In 1995, the estimated medical care cost for disability caused by cardiovascular disease was $137.7 billion.
- For 1997, the American Heart Association estimates that CVD will cost this nation more than $259 billion, including health expenditures and lost productivity resulting from illness and death.

Risk Factors

The identification of key risk factors for developing cardiovascular disease* has helped to prevent many deaths, but not nearly as many as have therapeutic and technological advances. "We have not come nearly far enough in managing the modifiable, behavioral risk factors that we already know to be important causes of cardiovascular disease," said James S. Marks, MD, MPH, Director, NCCDPHP. "Sizable fractions of our population have lower than average incidences of CVD as a result of choosing to lead healthier lives, so we know that prevention efforts can work," he added.

Modifiable Risk Factors

Although some risk factors, such as sex, age, and family history are not modifiable, exposure to other risk factors, including tobacco use or exposure to tobacco smoke, physical inactivity, poor nutrition, blood cholesterol levels, blood pressure, and weight, can be modified.

Three health-related behaviors—tobacco use, poor diet, and lack of physical activity—are the major risk factors for CVD. CDC is striving to reduce the prevalence of these risk behaviors by

- providing national leadership and technical expertise to states for tobacco use prevention and control.
- developing measures and recommendations for physical activity and developing a national health communications program to promote nutrition and physical activity.
- developing school-based health education designed to reduce the likelihood that children will adopt health-damaging behaviors.

[*Editor's Note: Total cardiovascular disease, including ischemic heart disease and stroke, is the term CDC uses to encompass ICD-9-CM codes 390–459.]

- supporting prevention research at academic institutions to conduct demonstration projects and to determine effective measures for preventing heart disease and stroke.
- administering the Preventive Health and Health Services Block Grant, the only source of federal funding for state-based programs that target CVD and its primary risk factors and that support community health promotion programs directed at CVD.
- working with states to develop the blueprint for a national, comprehensive program for reducing the prevalence of CVD.
- supporting state-based diabetes control programs to help persons with diabetes.
- developing national, state, and local partnerships to address CVD.

Emerging Risk Factors

Although certain risk factors for heart disease are clearly preeminent, "It's also important to be aware of emerging risk factors for heart disease; we need to be able to measure the impact of selected biomarkers such as homocysteine levels, serum insulin, and *Chlamydia pneumoniae* antibodies that are believed to increase morbidity and mortality caused by ischemic or coronary heart disease," according to Gregory W. Heath, DSc, MPH, Acting Chief, Cardiovascular Health Branch, Division of Adult and Community Health, NCCDPHP.

Viewpoints

"Even though cardiovascular disease is the leading cause of death in our country, there is not the same level of public concern for it as for various types of cancers or for infectious disease."

—Edith Sternberg, MPH, Chief, Division of Health Promotion, Illinois Department of Public Health, and Past President, Association of State and Territorial Chronic Disease Program Directors

Elevated homocysteine levels are associated with an increased risk of myocardial infarction and coronary atherosclerosis, thought to be precipitated by a deficiency in B vitamins (folate, B_6, and B_{12}). As many as 50,000 deaths caused by heart disease each year might be related to elevated homocysteine levels. "Thus it is our job to continue to monitor this risk factor through the literature and by examining existing data sets for confirmation of these hypotheses," said Dr. Heath.

Hyperinsulinemia is apparently a precursor to clinical diabetes mellitus that may be identified early in the life cycle. "Further efforts in tracking this marker and its role in premature atherosclerosis or macrovascular changes need to be pursued. Certainly, the link to diabetes is key; however, hyperinsulinemia appears to be an independent risk factor apart from the presence of diabetes for ischemic heart disease (IHD)," he said.

Although the presence of elevated *Chlamydia pneumoniae* antibodies among patients with IHD and myocardial infarction has been documented, the association that this bacteria—as well as that of other infectious agents including viruses—may have with coronary heart disease needs further exploration. "Continued monitoring of these observations through the analysis of data sets and collaboration with laboratory scientists and infectious disease specialists is essential," according to Dr. Heath. "The role of immune status may prove to be one of the 'missing links' relative to the unexplained CVD morbidity and mortality that we observe."

A collaboration between CDC and Kaiser-Permanente in San Diego is exploring the role of adverse childhood experiences and chronic disease conditions. In a study of about 10,000 adults, CDC has found that a childhood history of physical or sexual abuse is associated with a marked increase in the rates of cigarette smoking, lack of physical activity, and obesity—3 well-established CVD risk factors.

Genetics, too, also plays a complex role in susceptibility to heart disease and stroke. Marfan's syndrome leaves its imprint not just on physical appearance but also on the descending aorta of the heart, whereas sickle cell anemia, which attacks the hemoglobin, is related to higher than normal incidences of stroke. Understanding the interaction between genotype and environmental factors—such as health behaviors, diet, and other exposures—will aid in determining how such factors can be modified to improve cardiovascular health.

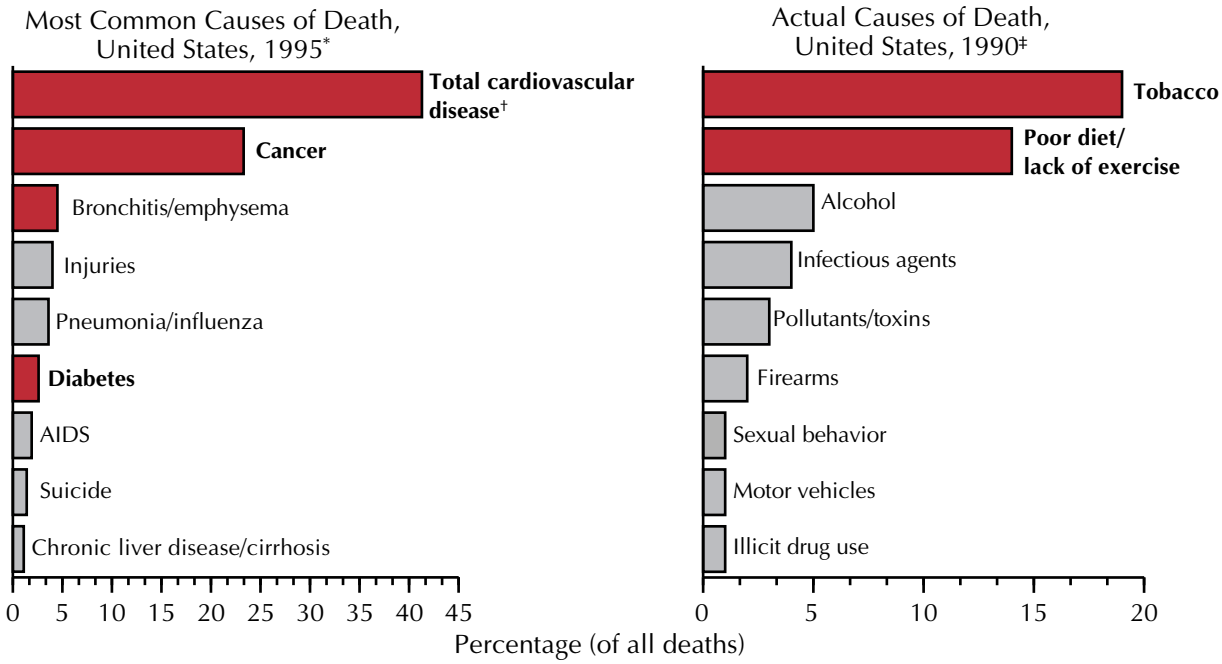
Special Populations, Heightened CVD Risks

Certain segments of our population are at greater risk for developing CVD than others. Black men have consistently higher age-adjusted death rates for CVD than those for any other sex or race classification, primarily because of their high incidence of both hypertension and diabetes. Middle-aged women who are approaching or have passed menopause appear to be at increased risk for CVD and assume the same level of risk as their male counterparts. Black women have higher CVD mortality outcomes, especially for stroke, than do white women, "most likely because they have a poorer risk factor profile, as indicated by their lower levels of physical activity, higher rates of hypertension, and poor diet. These conditions are perhaps related to lower socioeconomic status and limited access to, or use of, health care," Dr. Heath explained.

CVD and Life Expectancy

CVD is clearly the leading cause of death in the United States. But what would happen to our life expectancy if all major forms of CVD were eliminated? The most current computations available from the National Center for Health Statistics, CDC, reveal that our life expectancy would rise by almost 10 years. By contrast, eliminating all forms of cancer would increase our overall lifespan by 3 years.

Chronic Diseases and Related Risk Factors



*NCHS, CDC. Final Mortality Statistics—1995. *MVSR* 45 (11–Supplement 2): June 12, 1997
†Includes ischemic heart disease and stroke
‡McGinnis JM, Foege WH. Actual causes of death in the United States. *JAMA* 1993;270:2207–12.
Note: Red denotes conditions and behaviors addressed by NCCDPHP

Primary Prevention of CVD Requires a Comprehensive Strategy

An array of activities and programs focus on individual risk factors that lead to the development of cardiovascular disease (CVD). Many such programs and interventions target relatively small population groups in communities, others deliver crucial secondary prevention messages on a wider scale, but no overarching, state-based strategy for specially addressing the primary prevention of CVD has emerged. In part, this situation has developed because of how resources and funding have been allocated.

"The goal is for every state health department to have the commitment, capacity, and resources to implement comprehensive cardiovascular health promotion programs."

"It's really surprising not to be addressing the leading cause of death, CVD, in the states through a focused program," said Robert W. Moon, MPH, President, Association of State and Territorial Directors of Health Promotion and Public Health Education, and Chief, Health Systems Bureau, Montana Department of Public Health and Human Services.

"Because there are a variety of risk factors for CVD, we need a comprehensive multifaceted approach that focuses on the main risk factors," noted Edith Sternberg, MPH, President, Association of State and Territorial Chronic Disease Program Directors, and Chief, Division of Health Promotion, Illinois Department of Public Health. "We need to reshape many existing programs. It's difficult to bring together various types of programs that focus on different aspects of CVD prevention. And we also need to improve our base of information about CVD programs," she added.

Forging a Comprehensive CVD Prevention Plan

The momentum for forging a focused, state-based CVD prevention program is gaining critical mass. One key effort in reshaping these programs started a few years ago. In 1995, a consortium consisting of the Association of State and Territorial Directors of Health Promotion and Public Health Education (ASTDHPPHE), the Association of State and Territorial Chronic Disease Program Directors (ASTCDPD), and the Association of State and Territorial Public Health Nutrition Directors (ASTPHND), in collaboration with the Centers for Disease Control and Prevention, the American Heart Association (AHA), and the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health, launched a nationwide campaign to disseminate *Preventing Death and Disability from Cardiovascular Diseases: A State-Based Plan of Action.* This document cataloged the burden from cardiovascular diseases, risks factors for CVD, the current status of CVD prevention and control programs from the states' perspective, and a plan for CVD prevention and control programs.

"The plan was designed as a flexible template for developing and implementing state-based, comprehensive prevention and control programs," said Diane Orenstein, PhD, Research Psychologist, Cardiovascular Health Branch, Division of Adult and Community Health, NCCDPHP. "The goal is for every state health department to have the commitment, capacity, and resources to implement comprehensive cardiovascular health promotion programs."

To examine whether existing state-based CVD programs include the principles and activities in the proposed plan, the consortium described previously surveyed the CVD coordinators in all 50 states and the territories in September 1995. Before this strategic plan was circulated, only 6 of the 43 respondents indicated that their state had a CVD plan. About 6 months after the plan had been shared, 25 respondents reported that they have used or will use this template to develop a state CVD plan. Although these

findings are encouraging, in reality the states have differing degrees of resources to apply toward heart health programs.

NCCDPHP staff and state counterparts currently have conducted site visits to a dozen state health departments to see firsthand what has worked and to solicit ideas about how to focus a new national cardiovascular health initiative should funding be made available, according to Gary C. Hogelin, MBA, Assistant Director for Policy and Planning, Division of Adult and Community Health, NCCDPHP.

Such a program, he explained, would not initially cover all aspects of CVD prevention, but instead focus on disadvantaged populations at highest risk, such as certain rural populations in the Southeast that have higher prevalences of heart disease and stroke than those for the general population. "The design of the program is crucial. That's why we are going the extra mile to ensure that we will be doing things right," Mr. Hogelin noted.

"ASTCDPD supports CDC's leadership in evaluating how a comprehensive, state-based CVD prevention program could better focus our efforts to prevent the leading cause of death in the United States," Ms. Sternberg said.

Straightforward Approach to CVD Prevention

"The lack of any sort of scale of readiness that depicts what states are already doing and are capable of doing regarding CVD prevention could be remedied by developing this type of program," added Mr. Moon. He believes that consolidating existing activities that address key risk factors, such as smoking, poor diet, and physical activity could avoid redundancy within state health departments. He also emphasized the importance of straightforwardly approaching the actual causes of death, such as tobacco use and poor diet and sedentary lifestyles, in a prevention program targeting heart disease and stroke. "We might make more progress with issues such as tobacco control if these issues were tied more directly to programs aimed at preventing heart disease. Tobacco use contributes significantly to the development of heart disease, after all."

Another participant in this strategic planning is the American Heart Association. "We envision mobilizing and joining the efforts of the AHA and those of CDC to facilitate better working relationships with state and local health departments to determine priority messages," according to Dennis Milne, Marketing Director, Primary Prevention Team, American Heart Association.

One way to develop a mutually beneficial working relationship, according to Mr. Milne, would be to explore ways to better use the data about CVD from CDC's Behavioral Risk Factor Surveillance System. "This information could help all of us to customize which approaches to follow and which priorities to set for individual states," he noted.

Many Ingredients, Common Goals

Blending the right elements into a comprehensive heart health program is essential. "We need a consistent, comprehensive approach to CVD that rises above addressing segmented risk factors. We can then focus on the big picture and integrate our various programs," advised Joanne Mitten, MHE, Bureau of Health Promotion, Idaho Department of Health

Viewpoints

"Many people have this notion that having a fatal heart attack, especially if they are asleep, will be a painless, easy way to die. However, that type of thinking does not match the debilitating nature of CVD or the tremendous financial burden it imposes on health care."

—Dennis Milne, MHE, Marketing Director,
Primary Prevention Team,
American Heart Association

and Welfare. "States are really keying into the fact that education alone does not change behavior or reduce risk factor prevalence for heart disease," she added.

Fran C. Wheeler, PhD, Deputy Director, Prevention Center, School of Public Health, University of South Carolina, offers a similar viewpoint. "We must emphasize a balance between interventions that deal with personal behaviors and those that deal with efforts to affect the environment and policies," she said, stressing that "we need to do interventions that reach large segments of the population instead of individuals."

"For example, if we want people to be active so that they can reduce their risk of developing CVD, then there must be safe places to walk within communities. So we need to expand our vision and also work with city and county governments and development boards to have sidewalks put into both old and new neighborhoods," Dr. Wheeler told *cdnr*.

Russell V. Luepker, MD, MS, Professor and Head, Division of Epidemiology, School of Public Health, University of Minnesota, also supports this approach. "We need to place more emphasis on environmental changes that include regulations regarding smoking, such as clean indoor air laws and restricting youth access to tobacco products, and the availability of healthy foods and safe accessible places, such as schools, parks, and malls, to exercise. We need to be clear as a nation of our support for healthy lifestyles," he explained.

Rethinking traditional health departments roles as caregivers and shifting to becoming information providers and policy specialists and to doing policy and community interventions can help bolster CVD prevention efforts, Dr. Wheeler notes. As increasingly larger segments of the population receive their health care from managed care providers, new opportunities for creative interactions are developing.

"We have learned how necessary it is to involve the traditional health care community in disease prevention and health promotion," adds Dr. Luepker. "Prevention efforts can't be the domain of public health alone, but must involve all health providers."

Merging Strengths Makes Sense

"In developing a plan to reduce death and disability from CVD, we have to build on our experience in forging coalitions, working with various partners, and applying known prevention measures at all levels," according to James S. Marks, MD, MPH, Director, NCCDPHP.

Mr. Milne sees opportunities to combine AHA's expertise with CDC's. "We have extensive experience in science, marketing to consumers and health care providers, and in working with local and national media. CDC has accumulated the knowledge about behavioral interventions and cultivated relationships with state and local health departments. Plus CDC is fostering working relationships with managed care, which is something we are also developing and need to reach patients more directly with our prevention messages. We feel that it's crucial to find ways to pool our resources."

"NCCDPHP has institutional experience in ensuring that scientific and behavioral research are applied for the benefits of individuals. Working with partners that have complementary skills can help us mobilize faster. Preventing coronary heart disease and stroke are priorities that require us to act aggressively," Dr. Marks noted.

Drawing on Key Lessons Learned from Combating CVD Risk Factors

Those working to establish a comprehensive CVD prevention program can draw general lessons from efforts to curb tobacco use, reduce the prevalence of poor nutrition and physical inactivity, and prevent diabetes and its complications.

Smoking Prevention

Terry F. Pechacek, PhD, Visiting Scientist, Office on Smoking and Health, NCCDPHP, notes that the work done by the WHO Expert Committees almost two decades ago in defining population-based approaches for both smoking control and CVD prevention remains one valid, effective approach.

"These recommendations for social, policy, and environmental changes have not been widely implemented in this country," he said. Community intervention trials conducted since the late 1970s have adopted the broad philosophies defined in these recommendations, but the strategies continued to focus on the individual and small community rather than broader social environments.

"For smoking, and very likely for other CVD risk behaviors these trials strongly suggest that interventions need to be broader than a single community and focus on the environmental and policy changes at the state if not national level," Dr. Pechacek noted.

"We need to increase funding public education campaigns to compete with the billions of dollars the protobacco industry and food manufacturers spend for advertising," he said. Experience from states that generate funds from specially designated excise taxes show the high levels of spending that might be needed (e.g., $14–$16 million per year in Massachusetts alone), he noted, but emphasized that "the staggering costs of CVD morbidity and mortality suggest that many public health interventions would be cost-effective even if resources devoted to the effort were increased by magnitudes of tenfold or even 100-fold."

Exercise and Diet

High rates of physical inactivity, low rates of consumption of fruits and vegetables, and dramatic increases in overweight jeopardize the cardiovascular health of millions of Americans, according to William H. Dietz, MD, PhD, Director, Division of Nutrition and Physical Activity, NCCDPHP.

"The recent Surgeon General's Report on physical activity and health reported that more than 60 percent of Americans do not get regular, moderate physical activity that protects against heart disease," he noted. Physical activity and healthy eating are also important in preventing weight gain. In the United States, the proportion of overweight children and adolescents has increased 6 percent and the proportion of overweight adults has increased 9 percent in just the period between 1980 and 1994."

Dr. Dietz believes that pursuing policy and environmental approaches to promote healthy eating and physical activity can result in significant and enduring lifestyle change across all populations. "Healthy food alternatives in schools and worksites and more hours that school gyms and pools are open are two examples of many policy and environmental approaches that could enable people to engage in healthy behaviors that would reduce their CVD risk and prevent other chronic diseases as well."

Diabetes Prevention

Gloria Beckles, MD, Medical Epidemiologist, Division of Diabetes Translation, NCCDPHP, noted that "there is no reason to believe that interventions that target CVD prevention in the general public would not work equally well among persons with diabetes. In fact, because of the large excess risk of CVD among this group, we would expect people with diabetes to receive a greater absolute benefit." She believes that a comprehensive campaign to combat CVD that deals with the major risk factors of tobacco use, poor diet, and physical inactivity would also benefit diabetes control efforts.

Dr. Beckles believes that a focused CVD prevention program "should apply population-based approaches through sustained, integrated interventions, such as used in the North Karelia project in Finland, and these approaches must be incorporated into the ongoing activities of state and local health departments. An effective program must be designed specifically to target different age, cultural, and socioeconomic groups. We should also act to reach young people with cardiovascular health campaigns for we have good evidence from NHANES and other studies that the risk profile for CVD has begun to alter quite drastically—in the wrong direction—among adolescents."

Secondary Prevention of CVD Also Involves Behavioral Choices

Although the number of Americans dying from heart disease may be decreasing, the number living with heart disease is actually increasing. In 1994, more than 13 million Americans were living with coronary heart disease and more than 2 million were hospitalized with coronary heart disease. As the proportion of older adults among the U.S. population continues to increase, the number of patients with coronary heart disease is likely to grow as well, heightening the demand on health care facilities, resources, and expenditures.

Modifying risk behaviors, a potent tool for primary prevention of CVD, also has a role in secondary prevention. "Behavioral interventions are also applicable to those persons who have already had a heart attack. Prevention is a continuum," said Gregory W. Heath, DSc, MPH, Acting Chief, Cardiovascular Health Branch, Division of Adult and Community Health, NCCDPHP.

"We clearly have a long way to go in ensuring that our secondary prevention messages reach the majority of persons with coronary heart disease."

Treatment Options also Include Lifestyle Changes

"A number of prevention strategies—including physical activity, low-fat diet, maintenance of an appropriate body weight, and smoking cessation—are available to reduce morbidity and mortality," according to Wayne H. Giles, MD, Medical Epidemiologist, also in the Cardiovascular Health Branch. "These types of interventions that address risk factors have also been proven effective for the primary prevention of CVD," he added.

Along with interventions that aim to reduce risks, other key interventions for the secondary prevention of CVD involve counseling by clinicians and pharmacologic agents administered under a clinician's care. Another component of an increased focus on the secondary prevention of coronary heart disease is describing trends in hospitalization, mortality, procedure use, and treatment modalities at both the national and state levels.

Surveillance Discovers Gaps in Compliance

A soon-to-be-released CDC report found relatively low rates of physician compliance with these recommendations. "Almost half of all cigarette smokers were not counseled regarding smoking cessation, only 30 percent were counseled regarding physical activity, 20 percent regarding weight reduction, and only 30 percent regarding a low-fat, low-cholesterol diet. Concerning medications, only one of four adults were prescribed aspirin, and approximately 20 percent were prescribed beta blockers, lipid lowering medications, or ACE inhibitors," Dr. Giles noted. "We clearly have a long way to go to ensure that our secondary prevention messages reach the majority of persons with coronary heart disease," he added.

Yet, in spite of these low rates of physician compliance, the general public has absorbed at least some of these messages, according to Patrick L. Remington, MD, MPH, Associate Professor, Department of Preventive Medicine, University of Wisconsin. Both Wisconsin and Michigan have added questions regarding the use of aspirin and estrogen replacement therapy to their BRFSS modules. (See Prevalence of Aspirin Use to Prevent Heart Disease—Wisconsin, 1991, and Michigan, 1994, *MMWR* 1997;46:498–502). "We found that about 20 to 25 percent of adults are currently taking aspirin regularly to prevent CVD, that aspirin use increased with advancing age, and that more men than women took aspirin. We found

minimal differences in aspirin use by education or race," according to Dr. Remington. He also noted that the prevalence rates of women (16 percent) who use estrogen to prevent CVD were similar to the rates (20 percent) found for those who use aspirin.

Learning to Know the Signs Will Save Lives

The National Heart Attack Alert Program, one of several national initiatives spearheaded by the National Heart, Lung, and Blood Institute (NHLBI), NIH, translates research findings to the clinical setting and educates health professionals, patients, and the public about recognizing the signs of an acute myocardial infarction and then seeking or administering treatment quickly.

This program, which was formally launched in June 1991, strives to reduce morbidity and mortality from acute myocardial infarction through rapid identification and treatment, according to Mary McDonald Hand, MSPH, RN, Coordinator, National Heart Attack Alert Program, NHLBI. "Minimizing delays in treatment and then obtaining appropriate therapy saves lives and heightens the potential for an improved quality of life for acute myocardial infarction patients and those around them," she said.

An important component of the National Heart Attack Alert Program targets patients with a higher than average risk of having a heart attack so that they are better prepared to seek prompt medical care should they experience telling symptoms. Patients with established CHD or clinical atherosclerotic disease of the aorta, arteries to the limbs, or carotid arteries, are at 5–7 times higher risk of suffering or dying of a heart attack than the general population. These patients and their families need to be educated about recognizing and reacting to symptoms that affect decisions to seek treatment.

The American Heart Association and the American College of Cardiologists have also released guidelines for the post-hospitalization management of persons who have had a heart attack.* In addition to the drug management of such patients, these guidelines also reiterate the role of diet, physical activity, and smoking cessation, all of which are similar to the primary prevention guidelines.

Lifestyle Changes

"We are currently increasing our focus on the secondary prevention of coronary heart disease. Other federal agencies such as NIH and groups such as the American Heart Association are already broadly involved in this secondary prevention. Specifically, CDC is describing trends in hospitalization, mortality, procedure use, and treatment modalities at both the national and state levels. We expect that evaluations of these trends will help shape the development of effective and specific heart disease prevention programs," said Dr. Heath.

"Many of our community-based prevention programs, such as the Inter-Tribal Heart Project, are targeted toward groups considered to be at a higher risk for cardiovascular disease," he added.

*See the AHA Internet website at http://www.amhrt.org/pubs/scipub/statements/1995/13959999.html.

"Minimizing delays in treatment and then obtaining appropriate therapy saves lives and heightens the potential for an improved quality of life for acute myocardial infarction patients and those around them."

Viewpoints

"There seems to be a lack of passion toward cardiovascular disease; moreover, no one really attempts to put a face on heart disease."

—Joanne Mitten, MHE, Bureau of Health Promotion, Idaho Department of Health and Welfare

CDC's Lipid Laboratory Provides Crucial Standards for Research

"It takes the laboratory to tell the truth. It takes the program to tell what they need the truth for," says Gerald R. Cooper, MD, PhD, Medical Officer, Division of Environmental Health Laboratory Sciences, National Center for Environmental Health, CDC. As a key member of the CDC lipid laboratory since its inception some 40 years ago, Dr. Cooper can describe the long-standing interagency relationship between CDC and the National Institutes of Health's National Heart, Lung, and Blood Institute better than anyone. "It's been a very successful collaboration."

"It takes the laboratory to tell the truth. It takes the program to tell what they need the truth for."

The laboratory standardization program that focuses on cholesterol and other lipids serves as the national reference laboratory for measuring lipid and lipoprotein risks of CVD. "We assist laboratories that specialize in studying lipids to be sure that the results they report are reliable," explained Gary L. Myers, PhD, Chief, Special Activities Branch, Division of Environmental Health Laboratory Sciences, National Center for Environmental Health, CDC. "Our goal is to make sure that the findings reported from labs doing this research are accurate so that any changes observed and reported in these studies are not because of lab errors."

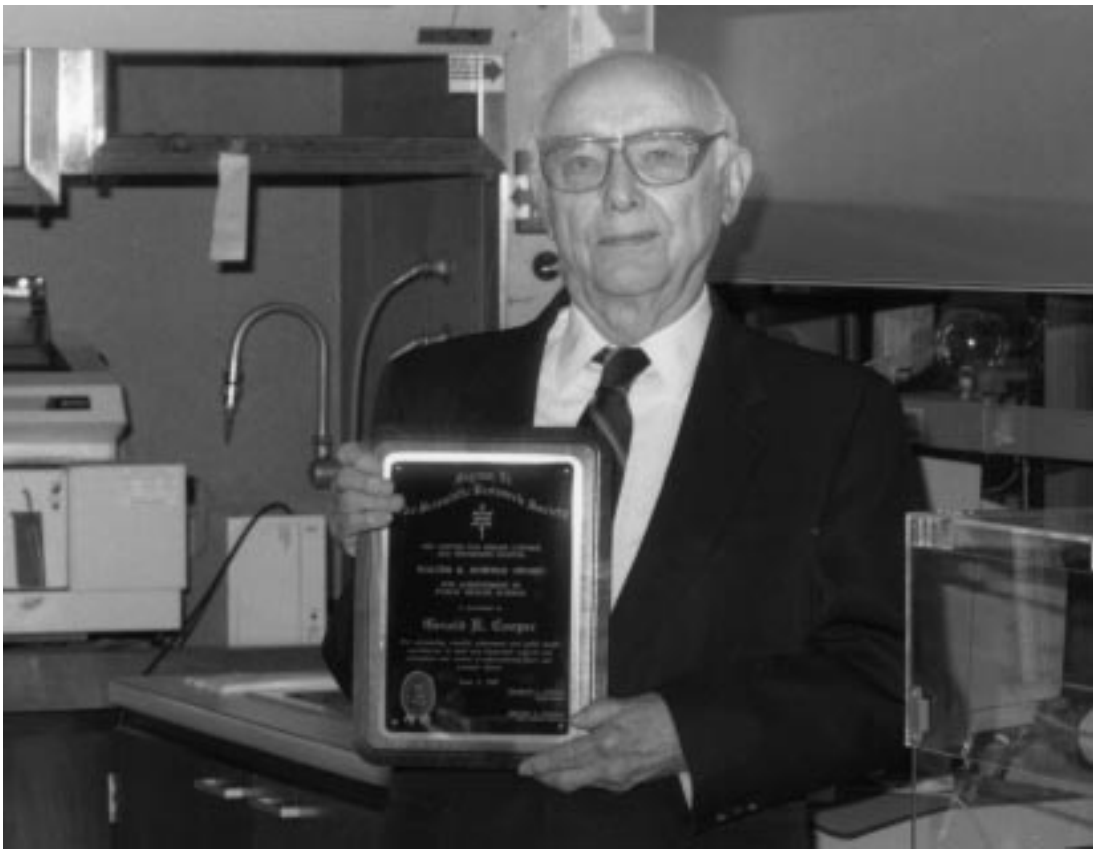
Without consistent, reliable data from the numerous studies of lipid risk levels, determining which interventions have proven successful in lowering cholesterol levels would be reduced to a hit or miss process. "We ensure that the results from one study are comparable to those from another. Consider the three National Health and Nutrition Examination Surveys, for instance," Dr. Myers said. "Combined results from these studies show a downward trend for cholesterol levels in the U.S. population. The cholesterol levels were measured in different labs using different methods. Because the labs were all standardized to the CDC reference lab, it was possible to adjust findings across the three studies."

Although the staffing of this laboratory is relatively small, its impact is staggering. In addition to the approximately 150 research laboratories that CDC standardizes, the CDC also certifies the performance of 6 reference method network laboratories—2 state laboratories and 4 university-affiliated research laboratories. These network reference laboratories in turn certify the accuracy of manufacturers products for measuring cholesterol levels.

Laboratory Network Multiplies Impact

During the past decade, the lipid lab, as it is often called in hallway banter, has also focused on helping general clinical laboratories improve their measuring procedures. Part of this effort ties in with *Healthy People 2000* objective 15.17: "Increase to at least 90 percent the proportion of clinical laboratories that meet the recommended accuracy standard for cholesterol measurement. (Baseline: 53 percent in 1985)." As Dr. Myers noted, "By certifying the large clinical laboratory consortiums through the reference network labs, we affect nearly 35 million cholesterol tests annually. The CDC lab multiplies its impact through this network."

While association of other risk factors to CVD are being investigated, Dr. Myers



Gerald R. Cooper, MD, PhD, Medical Officer, Division of Environmental Health Laboratory Sciences, National Center for Environmental Health, CDC, shown with his Walter R. Dowdle Award for Achievement in Public Health Service. Given annually by CDC's chapter of Sigma Xi, Scientific Research Society. His award is inscribed "For outstanding scientific achievement and public health contributions in lipid and lipoprotein research and prevention and control of artherosclerotic, heart, and vascular disease."

acknowledged that most people are diagnosed and subsequently treated "based on the traditional lipid profiles that includes total cholesterol, HDL, LDL, and triglycerides. We hope to expand our accuracy assessments to include research on other emerging risk factors for CVD."

After a career largely spent focusing on lipid research, Dr. Cooper believes that the task of designing and conducting effective interventions requires staying focused on the major risk factors. "More than 100 different risk factors affect cholesterol levels. It's that complicated, so you have to pick the major risk factors."

Discovering New CVD Risk Factors

Additional studies may someday detect significant new risk factors. "Research has taught us things we couldn't believe at first. Initially, everyone was surprised when smoking was proven a major risk factor for CVD," Dr. Cooper noted. "In fact, smoking was added to early research studies almost as an afterthought.

"Now chylomicrons, which are responsible for transporting dietary fat and are synthesized by and released from the intestinal epithelial cells, that are remnants of the metabolic process, are an emerging risk factor. Here, again, standardization of resources for conducting new tests is needed to make the results of research valid."

"One of CDC's defining strengths is that we coordinate both research and programs," stressed James S. Marks, MD, MPH, Director, NCCDPHP. "The science we are performing is more practical because we have programs that are linked to our research. Conversely, our programs are more grounded because they are derived from valid, dependable research. This symbiotic relationship is crucial as we work to establish a national, comprehensive program to prevent heart disease.

NCCDPHP's CVD Activities Cut Across Disciplines, Programs

Elements of CVD prevention are threaded through a significant proportion of NCCDPHP's varied programs and activities. Many of these build on broad, proven intervention strategies to combat three health-related behaviors—tobacco use, poor diet, and lack of physical activity—which are major risk factors for CVD, including ischemic heart disease and stroke. In addition, the presence of diabetes elevates the risk of heart disease and stroke.

"CDC's role in providing national leadership and technical expertise to states for tobacco use prevention and control is well established," noted James L. Marks, MD, MPH, Director, NCCDPHP. To reduce the prevalence of tobacco use, CDC supports and coordinates tobacco use prevention and control programs in 32 states and the District of Columbia. These programs include strategic activities designed to reach those most at risk, including youths, minorities, women, and individuals with low-socioeconomic status.

"We are striving to provide the same level of leadership in the areas of nutrition and physical activity, including developing measures and recommendations for physical activity and developing a national health communications program to promote nutrition and physical activity," Dr. Marks said.

The publication of *Physical Activity and Health: A Report of the Surgeon General* in 1996 boosted those efforts. (See *cdnr*, Fall 1996, for more information.) Surveillance reveals that more than a third of the nation's adults are obese and fewer than a quarter of the population report eating recommended amounts of fruits and vegetables. These high levels of obesity and poor dietary choices make millions of Americans at risk for CVD.

"Regrettably, the lifestyles too many young people are developing will make them susceptible to chronic diseases—including cardiovascular disease—later in life."

People with diabetes are 2–4 times more likely to have heart disease or stroke than people without diabetes. CDC's state-based diabetes control programs target these risks and other life-threatening complications from diabetes.

In addition to those more broadly focused programs, a number of other NCCDPHP initiatives focus more directly on CVD-related issues prevention. Overviews for these activities follow this section:

- providing children with school-based health education designed to reduce the likelihood of their adopting health-damaging behaviors.
- developing interventions among underserved minority women through the prevention research at academic institutions.
- investigating geographic disparities in the burden of heart disease among women.
- understanding how genetic information can be applied to promote health and prevent disability, morbidity, and mortality from CVD.

Teaching Youths to Reduce Their Risk for CVD

"Children are one-third of our population and all of our future," said John R. Moore, PhD, RN, Assistant to the Director for Policy and Development, Division of Adolescent and School Health, NCCDPHP. "The adults our young people become are determined largely by behaviors adopted during their youth. Regrettably, the lifestyles too many young people are developing will make them susceptible to chronic diseases—including cardiovascular disease—later in life."

The classic trilogy of unhealthy behaviors known to contribute to heart disease include tobacco use, physical inactivity, and poor dietary practices. Analysis of responses to the Youth Risk Behavior Survey, revealed that among high school students in 1995,

- 71 percent had ever smoked cigarettes, and 16 percent smoked cigarettes on 20 or more days during the month before the survey. Current tobacco use (cigarette smoking in the past 30 days) has increased significantly from 1991 through 1995 among U.S. high school students; 35 percent of high school students were current smokers in 1995 compared with 28 percent in 1991.
- 79 percent did not participate in moderate physical activity. Daily participation in physical education classes by high school students dropped from 42 percent in 1991 to 25 percent in 1995. The time students spend in physical education classes is decreasing; among those enrolled in a physical education class, the percentage who were active for at least 20 minutes during an average class dropped from 81% in 1991 to 70 percent in 1995.
- 39 percent ate more than 2 servings of high-fat foods the day before the survey. More than 84 percent of young people eat too much fat, and more than 91 percent eat too much saturated fat. The *Healthy People 2000* objective is to increase to at least 50 percent the proportion of people aged 2 and older who meet the dietary guidelines' average daily goal of no more than 30 percent of calories from fat and fewer than 10 percent of calories from saturated fat.

But in-school youths constitute a potentially reachable population. Every school day, 46 million young people attend over 100,000 schools across the nation. Therefore, schools can have an enormous, positive effect on the health of the nation and its future health care costs. "To enhance this effect, CDC has been helping implement coordinated school health programs that provide youths with the information and skills needed to avoid health risk behaviors," Dr. Moore added.

School Health Promotion Expands

In 1987, CDC established a national framework to implement HIV prevention education in schools and has since extended this framework to promoting a tobacco-free lifestyle, a diet rich in healthy foods, and lifelong physical activity. The content of these health promotion efforts is outlined by CDC-developed guidelines for effective school health programs.

CDC funding has allowed coordinated school health programs to be implemented in 12 states, 1 territory, and the District of Columbia. Participants have

- established a Memorandum of Agreement between the state education agency and state health agency for collaboration on promoting the educational achievement and health of children.
- established an interagency task force or coalition that brings together public and private partners for addressing the health of children and their educational needs.
- hired a director for coordinated school health programs in both the state education agency and state health agency, and hired a coordinator of comprehensive school health education in the state education agency.

The CDC guidelines were developed jointly with national nongovernmental organizations, which have also consulted on policies and training programs for local affiliates and other organizations to use in school-based efforts for improving adolescents' health. The text of these guidelines and additional information on CDC's school health program are available from the CDC web site http://www.cdc.gov/nccdphp/dash.

For more information, contact John R. Moore, PhD, RN, Division of Adolescent and School Health, NCCDPHP, Centers for Disease Control and Prevention, Mail Stop K–29, 4770 Buford Highway, NE, Atlanta, GA 30341-3717; 770/488-3251.

Prevention Research Centers Work to Prevent CVD among Minority Women

The burden of CVD, the leading cause of death among American women, is disproportionately high for black women, for whom the prevalence of risk factors, such as hypertension, diabetes, and obesity, is particularly high. Innovation is needed to encourage these women, many of whom live in underserved areas, to decrease their risk for CVD and other chronic diseases. Two projects, sponsored by CDC's Prevention Research Centers Program and the National Institutes of Health's Women's Health Initiative, are exploring the effects of particular church and community-based interventions designed to reduce risk behaviors among women aged 40 years or older.

At selected churches in Baltimore, Maryland, women enrolled in Project Joy find support in their beliefs and from each other in making positive lifestyle changes.

Using Church-Related Interventions in an Urban Community

In Baltimore, Maryland, Project Joy is serving women through urban, predominantly black churches and exploring the faith community's influence on helping these women to stop smoking, improve their diet, and regularly engage in physical activity—three behaviors that can stem the development of CVD.

The interventions are described as self-help, standard, and enhanced. Women attending churches offering the self-help intervention are asked to meet once for education on and screening for cardiovascular risk. Each participant receives "Joy in a Box," a slender black carton containing recipes and healthy eating tips, a pocket guide to measuring daily fat and cholesterol intake, record books for weight control and exercise, information on physical activity events, and a citizen's guide to fighting tobacco use in the home and community.

Women attending churches where the standard intervention is offered are invited to receive the self-help intervention plus a nutrition and fitness kick-off retreat, weekly health education sessions, and weekly aerobics and stretch classes. Laypersons from the congregation are trained as lay health advisors to lead these activities. The activities occur within the church context, but no overt effort is made to tie the church culture to the intervention.

Women at churches offering the enhanced intervention, however,

receive all components of the standard intervention modified to incorporate the faith beliefs and practices of the church. For example, handouts incorporate Christian symbols and relevant Bible scriptures. Fitness and flexibility sessions include dance or movement to Christian song. Healthful behaviors are promoted through prayer groups, Bible study, and church bulletins. All members of the congregation are involved in Project Joy Sundays, which include sermons on nutrition and fitness, personal testimonials about positive behavioral change, and heart-healthy foods at church fellowship events.

"Each church community is heterogenous in terms of socioeconomic status, educational attainment, and other characteristics. But a common faith binds these women and helps them support each other in the pursuit of healthy goals," said Diane Becker, RN, ScD, MPH, the project's principal investigator.

Each participant also receives a personal letter explaining the results of her screening tests, including levels of cholesterol, triglycerides, glucose, and blood pressure; height, weight, and body fat measurements; and nutrient analysis. The letter includes individualized advice on how to bring any unacceptable levels within the normal range.

The Reverend Herbert W. Watson, Jr., Pastor of St. Mark's United Methodist Church, commented, "One Sunday, a congregant stopped to thank me for getting her involved in our health promotion program. She recalled how she used to think she needed more time to do all she needed to do. Now she tells me she can do more because she has more energy." Many of these women have said they have noticed improvements in flexibility, carrying out daily activities, and weight loss.

Researchers from the prevention research center at The Johns Hopkins University spent a year and a half gaining insight into the community, recruiting churches and supportive pastors, testing educational materials, and putting the interventions in place. Follow-up assessments of dietary habits, activity and fitness, and anthropometric and biologic measurements will reveal whether this spiritually enhanced intervention can help lead to healthier lives.

Rural Community Helpers Motivate Neighbors

In contrast, research in rural Alabama focuses on the community at large in the Uniontown Project. In Uniontown, a community of 1,730 persons, where income is low and material resources are scant, neighbors often rely on each other for encouragement and advice. To dispense information on nutrition, physical activity, and smoking cessation, health promotion efforts involve identifying and training "natural helpers" in the community to conduct health education classes, organize self-help activities, and refer women to service agencies.

"Residents here tend to trust their neighbors," Mary Slater, the Uniontown Project Coordinator said. "People in underserved areas often have a long history with and are motivated toward helping themselves and each other. Given the right information, women in Uniontown can make enormous strides in reducing their health risks. Previously this information may have been lacking because the community is rural and has few health resources. The health promotion program helped reveal resources many people were not aware of."

Researchers from the Center for Health Promotion at the University of Alabama in Birmingham worked with several other universities, community health departments, and community health councils in identifying Uniontown's natural helpers—the people already looked to in the community for information about medication, transportation to health appointments, and other aid. These helpers were invited

In Uniontown, Alabama, heart healthy cooking demonstrations involve residents in cardiovascular risk reduction activities.

for training as "community health advisors" and asked their opinions of residents' self-perceived needs and priorities.

Beautifying the town was one goal expressed. Lay and professional health workers joined together in moving toward this goal by helping residents revitalize a walking/jogging trail that had fallen into disrepair, renovate a gymnasium in the city's Community Life Center, and plant gardens in central community areas. These environmental changes not only support messages about physical activity and healthy eating but help meet community needs. "These activities helped enhance our surroundings," Ms. Slater added. "Our neighborhoods look more attractive, which makes us feel better about ourselves and proud when people come by."

The community health advisors are trained to conduct health education classes, organize self-help activities, and refer women to service agencies. They are now organizing and leading cooking clubs held in people's homes and physical activity clubs that gather at the trail or the Community Life Center, assessing the availability and cost of fresh produce, and working with community residents who want to quit smoking. The city of Uniontown is itself a partner in the interventions. City hall is the site of health fairs, and local churches and schools distribute health information through bulletins and flyers. The community health council, comprising area business leaders, city council members, health care professionals, and other residents, helps draw the interventions further into the fabric of community life.

"Both these projects are exemplary," commented Loretta Finnegan, MD, Director, Community Prevention and Outreach, Women's Health Initiative, National Institutes of Health. "I am impressed by the creative methods applied in these community prevention components of the Women's Health Initiative. Methods that will reach women wherever they are—both geographically and

Many Prevention Research Center Projects Tie-in with CVD Prevention

CDC's Health Promotion and Disease Prevention Research Centers Program draws on multidisciplinary expertise in schools of public health, medicine, and other health professions. Using CDC core funding, researchers at 14 university centers, each having a distinct research theme, apply multiple methods to solving complex public health problems. Almost every center devotes at least a portion of its resources to fighting aspects of cardiovascular disease. Summaries of several notable activities follow.

- The Saint Louis University's Prevention Research Center conducts projects to prevent cardiovascular disease in low-income, rural communities. Projects in the Bootheel, for example, examine how environment influences physical activity among older women.
- At the University of Texas Houston Health Science Center's Southwest Center for Prevention Research, innovative school programs are increasing children's physical activity levels and improving their diets—interventions that may reduce the children's future risk for cardiovascular disease.
- The West Virginia University's Prevention Research Center is coordinating a Women's Health Cardiovascular Network through which researchers can identify, share, synthesize, and disseminate interventions and model programs that have improved women's cardiovascular health. The network includes several prevention research centers, CDC's Cardiovascular Health Branch, and state and community partners.
- The University of Washington's Northwest Prevention Effectiveness Center has several projects under way to improve physical activity, nutrition, and community interaction among senior citizens residing in low-income public housing in the greater Seattle area.
- Both Columbia University's Harlem Center for Health Promotion and Disease Prevention and the University of Illinois at Chicago's Prevention Research Center are tailoring cardiovascular prevention strategies to the unique character of urban, minority populations.
- The University of North Carolina's Prevention Center is coordinating Health Works for Women, a project for women at blue-collar worksites in rural North Carolina. The project uses computer-based, tailored magazines and workers trained as "natural helpers" to help women establish behaviors that will promote cardiovascular health and reduce their risk for other chronic diseases.

personally—can be evaluated as model programs for dissemination and institutionalization in comparable communities throughout the nation."

For further information, contact Patricia L. Riley, CNM, MPH, Program Director, Health Promotion and Disease Prevention Research Centers Program, Centers for Disease Control and Prevention, Mail Stop K–30, 4770 Buford Highway, NE, Atlanta, GA 30341-3717; 770/488-5395; E-mail njs0@cdc.gov.

Small Area Mapping of CVD Among American Women

Age-adjusted death rates for cardiovascular disease, which is the leading cause of death among women of all ethnic and racial groups, ranged from 55.8 per 100,000 among Asian women to 164.4 per 100,000 among black women in 1993. "In addition to these ethnic and

racial disparities, substantial geographic inequities in the burden of heart disease among women have also been observed and are increasing over time," notes Michele Casper, PhD, Epidemiologist, Division of Adult and Community Health, NCCDPHP.

"Small area mapping of heart disease provides communities with local information on the burden of heart disease," she explained. Geographic information systems are used to integrate community-level data from different sources, including vital statistics, census, Medicare, the Behavioral Risk Factor Surveillance System (BRFSS), the Area Resource File, and hospital records. Extensive small area mapping of heart disease can identify the geographic areas with the greatest need for programs and policies to reduce the risk and improve the treatment of heart disease among women of all ethnic and racial groups. [Note: Although this project is geared toward women, small area mapping can be applied to any population group.]

Objectives, Rationale, and Methodology

CDC is collaborating with a team of experts in the fields of spatial statistics, geographic information systems, and cardiovascular disease epidemiology at West Virginia University on a project to produce small-area maps of heart disease among women. In this project, epidemiologic methods are being integrated with state-of-the-art techniques for spatial analysis and geographic information systems. The objectives are to

- calculate the burden of heart disease among women from 1990 through 1995 within counties and county-groups by age and race/ethnicity.
- produce color maps of heart disease illness, death, risk factors (e.g., smoking, obesity, diabetes, and lack of physical activity), secondary prevention and treatment modalities (e.g., oral contraceptive use, aspirin, postmenopausal hormone replacement therapy, coronary angioplasty, and bypass surgery), and barriers to care among women by age-group and race/ethnicity.
- identify and track spatial clustering of heart disease among women using the local indicators of spatial association (LISA) statistical approach, which was designed specifically for use with small area mapping.

Program and Policy Applications

"Maps have historically played a strong role in identifying and responding to public health concerns—from John Snow's maps of cholera to the Cancer Atlas," said Dr. Casper. The extensive set of maps detailing the burden of heart disease among women by age-group and race/ethnicity will be an important public health tool for understanding the conditions contributing to the geographic variation in heart disease among women, increasing the effectiveness of program planning and policy development, and responding to congressional inquiries.

For more information, contact Michele Casper, PhD, Division of Adult and Community Health, NCCDPHP, Centers for Disease Control and Prevention, Mail Stop K–47, 4770 Buford Highway, NE, Atlanta, GA 30341-3717; 770/ 488-5529.

Genetics Provides New Directions for CVD Prevention and Surveillance

By 2005, most—if not all—of the estimated 100,000 human genes will have been identified. Clearly, the myriad advances in human genetics will offer new opportunities for CVD prevention. CDC, in concert with other federal agencies and in collaboration with many public and private partners, can assist public health professionals in better understanding how genetic information can be applied to promote health and prevent disability, morbidity, and mortality due to CVD.

Prevention would include using environmental, behavioral, and medical interventions in different communities and population subgroups through such activities as assessing family history and genetic counseling. For example, NCCDPHP has funded a program to identify persons with familial hypercholesterolemia, a condition associated with a high risk of premature cardiovascular disease. It has also funded research to understand genetic factors that influence the risk of stroke among young, black women.

"Much of the delivery of genetic tests and services for disease prevention and health promotion will be done within the context of the evolving health care system, including the managed care setting, and not under mandated public health programs," according to Robert F. Anda, MD, MS, Medical Epidemiologist, Division of Adult and Community Health, NCCDPHP. As outlined by the *Institute of Medicine Report on the Future of Public Health* (1988), public health agencies will have an increasing role in assessing the health needs of populations, working with the private sector in assuring the quality of genetic tests and services, and evaluating the impact of interventions on medical, behavioral, and psychosocial outcomes.

"Population-based studies will help us to understand how the environmental factors and behaviors, such as diet, contribute to the development of cardiovascular disease among persons susceptible due to genotype," Dr. Anda explained. Such studies can also identify environmental factors that produce genetic alterations that result in disease.

Advances in human genetics may serve to refine the predictive value of traditional risk factors such as hypertension, smoking, physical inactivity, hypercholesterolemia, and diabetes. Epidemiologic studies that account for genotype or that correlate genotype with clinical findings, may also reveal ameliorating factors, new interventions, or innovative ways of applying standard interventions, according to Dr. Anda. "Epidemiologic follow-up studies will evaluate intervention process and outcome indicators—that is, the effect of population-based interventions on reducing morbidity and mortality," he stated.

"Population-based studies will help us to understand how the environmental factors and behaviors, such as diet, contribute to the development of cardiovascular disease among persons susceptible due to genotype."

Total Cardiovascular Disease—ICD-9-CM codes 390–459

Diseases of Heart (78.3%)

Ischemic Heart Disease or Coronary Heart Disease (52.7% of all CVD deaths)

- Acute myocardial infarction or "Heart attack" 410)
- Other acute IHD (411)
- Old myocardial infarction (412)
- Angina pectoris (413)
- Chronic IHD (414)

Other Heart Disease (25.6% of all CVD deaths)

- Rheumatic fever/heart disease (390–398)
- Hypertensive heart disease (402)
- Hypertensive heart/renal disease (404)
- Disease of pulmonary circulation (415–417)
- Congestive heart failure (428)
- Other forms of heart disease (420–427, 429)

Cerebrovascular Disease (15.6%)

Stroke or Brain Attack (430–438)

Other Cardiovascular (6.1%)

- Essential hypertension (401)
- Hypertensive renal (403)
- Atherosclerosis (440)
- Other disease of arteries, arterioles, and capillaries (441–448)
- Diseases of veins, lymphatics, and other circulatory (451–459)

ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) Codes for the underlying cause of death recorded on death certificate. Cardiovascular diseases account for 42.5% of all deaths each year in the United States.

Key NCCDPHP Publications and Resources on CVD

NCCDPHP has developed a growing collection of publications and information resources that document successful components of CVD prevention planning and programs.

Freestanding Publications

Many were jointly issued by NCCDPHP and numerous agencies and organizations, including multinational health organizations, universities, community groups, and agencies of other nations and tribal governments.

Cardiovascular Disease Surveillance: Ischemic Heart Disease, 1980–1989. (1993); *Cardiovascular Disease Surveillance: Stroke, 1980–1989*. (1994) Summarizes data derived from nationally representative data sets, on mortality, hospitalizations, incidence, and prevalence associated with two conditions that strongly contribute to the burden of CVD.

The Catalonia Declaration: Investing in Heart Health. (1996) Offers evidence—from the Second International Heart Health Conference—that investing in policies and programs for CVD prevention saves both lives and money.

Evaluating Community Efforts to Prevent Cardiovascular Diseases. (1995) Provides tools and strategies for measuring the products and outcomes of community partnerships for reducing the prevalence of risk factors for CVD.

Guidelines for School Health Programs to Prevent Tobacco Use and Addiction. (*Morbidity and Mortality Weekly Report* 1994;43, No. RR-2) Summarizes recommendations for helping school personnel plan, implement, and assess programs and policies to prevent tobacco use and the disease and death that result from tobacco use.

Guidelines for School and Community Programs to Promote Lifelong Physical Activity Among Young People. (*Morbidity and Mortality Weekly Report* 1997;46, No. RR-6) Summarizes recommendations for encouraging physical activity among young people to reduce their risk for CVD and other chronic diseases in adulthood.

Guidelines for School Health Programs to Promote Lifelong Healthy Eating. (*Morbidity and Mortality Weekly Report* 1996;45, No. RR-9) Summarizes strategies for promoting healthy eating among school-age youths to reduce the prevalence of unhealthy effects, such as overweight and obesity—risk factors for CVD.

Inter-Tribal Heart Project: Results from the Cardiovascular Health Survey. (1996) Presents prevalence data on lifestyle factors, use of health care services, and physiologic conditions possibly related to CVD among residents of three Indian reservations in the upper Midwest.

Preventing Death and Disability from Cardiovascular Diseases: A State-Based Plan of Action. (1994) Guides states in developing and conducting comprehensive CVD prevention and control programs by outlining the basic functions of such programs.

S*tate Cardiovascular Disease Prevention Plans and Programs: Results of a Survey*. (1997) Rates state-based CVD programs on the principles and activities recommended in *Preventing Death and Disability from Cardiovascular Disease*s (see above).

Worldwide Efforts to Improve Heart Health: A Follow-up to the Catalonia Declaration—Selected Program Descriptions. (1997) Profiles nationally and internationally sponsored programs concerned with heart health as well as international, national, and community programs focused on areas of CVD risk: tobacco control, nutrition and physical activity, and blood pressure and cholesterol.

Selected Journal Articles

The first set of papers identifies policy and environmental interventions and strategies in the areas of tobacco, nutrition, and physical activity that can be used to promote cardiovascular health. The second set defines community heart health programs, discusses the reasons for and benefits of such programs, and addresses key components and resources.

Brownson RC, Matson Koffman DM, Novotny TE, Hughes RG, Eriksen MP. Environmental and policy interventions to control tobacco use and prevent cardiovascular disease. *Health Education Quarterly* 1995;22:478–498.

Glanz K, Lankenau B, Foerster S, Temple S, Mullis R, Schmid T. Environmental and policy approaches to cardiovascular disease prevention through nutrition: opportunities for state and local action. *Health Education Quarterly* 1995;22:512–527.

King AC, Jeffery RW, Fridinger F, Dusenbury L, Provence S, Hedlund SA, Spangler K. Environmental and policy approaches to cardiovascular disease prevention through physical activity: issues and opportunities. *Health Education Quarterly* 1995;22:499–511.

Speers MA, Schmid TL. Policy and environmental interventions for the prevention and control of cardiovascular diseases. *Health Education Quarterly* 1995;22:476–477.

Elder JP, Schmid TL, Dower P, Hedlund S. Community heart health programs: components, rationale, and strategies for effective interventions. *Journal of Public Health Policy* 1993;14:463–479.

Mittelmark MB, Hunt MK, Heath GW, Schmid TL. Realistic outcomes: lessons from community-based research and demonstration programs for the prevention of cardiovascular diseases. *Journal of Public Health Policy* 1993;14:437–462.

Schwartz R, Smith C, Speers MA, Dusenbury LJ, Bright F, Hedlund S, Wheeler F, Schmid TL. Capacity building and resource needs of state health agencies to implement community-based cardiovascular disease programs. *Journal of Public Health Policy* 1993;14:480–494.

Databases

The Health Promotion and Education Database, produced by NCCDPHP, contains more than 25,000 entries on chronic disease prevention, health promotion, and health education that provide information about effective programs and risk reduction interventions. Though not exclusively focused on CVD prevention, many of the citations and abstracts in this database are applicable, either directly or indirectly. This database is available through CDP-File, a CD-ROM that NCCDPHP produces or as part of the Combined Health Information Database (CHID), which may be searched on-line at http://chid.nih.gov.

For more information about these databases, contact Technical Information and Editorial Services Branch, NCCDPHP, Centers for Disease Control and Prevention, MS K–13, 4770 Buford Highway, NE, Atlanta, GA 30341-3717; 770/488-5080; E-mail ccdinfo@cdc.gov.

World Wide Web

Information about many of NCCDPHP's programs and activities is also available from our Internet website at http://www.cdc.gov/nccdphp/nccdhome.htm.

State-Based CVD Prevention Tactics

State-based efforts for preventing cardiovascular disease and stroke have taken diverse directions often dictated but by the availability of resources. States such as California, which have legislated an increase in tobacco excise taxes to generate money for disease prevention and health promotion, have been able to step up their efforts. Others rely on approaches that require fewer resources.

Long-Term Support Yields Results in New York

"What makes the difference to the New York State Healthy Heart Program is support," said Sonja Hedlund, MS, Program Director. "The governor, the legislature, and the state health department continue to support reduction of cardiovascular disease morbidity and mortality by earmarking funds for prevention. This makes sense because CVD is the leading cause of death in New York State."

"The governor, the legislature, and the state health department continue to support reduction of cardiovascular disease morbidity and mortality by earmarking funds for prevention."

A 1982 state public health law authorized funding for the Healthy Heart Program of the Mary Lasker Heart and Hypertension Institute of the New York State Department of Health. These funds, which are supplemented by block grants, have not been used to build infrastructure or staff for the program, now in its second decade.

"We wanted to reach hundreds of communities," Ms. Hedlund said, "and we have often given very small amounts of money to grassroots organizations. For example, by our awarding of minigrants, 37 projects encouraged nearly 14,000 residents over the age of 60 to participate in physical activities at more than 45 sites. The overall cost: $17.87 per senior."

In fact, no one is left out of the state's CVD prevention efforts. The program has worked with more than 80 local agencies to create heart healthy environments in schools, worksites, senior centers, faith communities, and other sites. Programs have reached culturally diverse, primarily immigrant communities; urban communities where many residents have incomes below the poverty level; people in rural counties; migrant farmworkers; children in day care; the disabled; and other groups with special needs. All aspects of CVD prevention—including nutrition, physical activity, and tobacco use—are addressed, and interventions stress environmental and policy changes that make it easier for people to make healthy choices.

As a result of worksite wellness programs, many employers in New York State have initiated at least a partial ban on smoking on work premises and prohibited the onsite sale of tobacco products. Worksite cafeteria menus and vending machine choices have been modified to encourage low-fat, healthy eating. Some employers have established physical activity programs or offered fitness club subsidies.

School meals were improved for more than 330,500 students in 300 schools by retraining food service personnel, making low-fat milk available, and providing nutrition education. Through school-based tobacco prevention efforts, 121 students were trained as peer leaders to discourage student smoking. Antitobacco presentations by some of these students reached more than 5,000 teenagers and children. Articles published in school newsletters reached more than 10,000 students, and peer leaders' participation in a radio talk show reached 25,000 people. Students have also led community-based tobacco prevention activities that resulted in antitobacco advertisements in theaters, in stores, and on the radio; smokefree restaurants; and cable TV airing of a video on the hazards of smoking.

For further information, contact Sonja Hedlund, MS, Bureau of Health Risk Reduction, New York State Department of Health, ESP, Corning Tower, Room 710, Albany, NY 12237; 518/474-1515; E-mail: SAHO5@health.state.ny.us.

California Invests in CVD Prevention

"A key obstacle to reducing the rate of death from total cardiovascular disease in California was a lack of primary prevention efforts. Although CVD is the leading cause of death in California, local agencies lacked information and funding for comprehensive prevention programs," according to Diana Cassady, DrPH, CORE Program Acting Director.

The state's Cardiovascular Disease Outreach, Resources, and Epidemiology (CORE) Program has sought to address these problems by assessing, analyzing, interpreting, and sharing data, and also by making dollars available to agencies to address CVD prevention at the local level. CORE data show that

- not one of the 64 local health departments has comprehensive CVD prevention programming in place.
- the burden of CVD is not acknowledged by many Californians; only 23 percent know that heart disease is the leading cause of death.
- forty-five cities in California have significantly higher death rates from CVD than the state rate. In fact, the highest ranked city had a heart disease death rate 10 times higher than that of the lowest ranked city.

To help address these discrepancies, CORE has taken a number of steps. In 1995, CORE, in cooperation with the California Cardiovascular Disease Prevention Coalition, funded 10 local projects designed to increase CVD awareness at the local level and to develop comprehensive nutrition, physical activity, and smoking interventions. Many participants were local health departments.

Although funding covered only 1 year, the effort paved the way for continuing CORE and Coalition cooperation to secure additional resources for local health departments and other community organizations, and to increase CVD awareness statewide. The project also featured regional workshops where CORE shared research and information on CVD and met individuals interested in prevention.

CORE also worked jointly with the Physical Activity and Health Initiative and the California Healthy Cities Project to create the Heart Smart Cities Project. The cities with high CVD death rates were offered $30,000 grants to fund heart disease prevention efforts that would include a citywide CVD education campaign and increase access to healthy foods and physical activity among high-risk residents. Matching funds from a local nonprofit hospital were required, building upon state legislation that requires hospitals to demonstrate community benefits to preserve their tax-exempt status.

Evaluations suggest that education alone has a limited effect on the health status of the entire community. The new strategies therefore target small areas such as neighborhoods to concentrate the effect of a project; target high-risk populations; and make local policy changes to promote healthy choices for city residents.

CORE's ongoing mission to prevent and control CVD among all Californians will continue by

- creating new data reports on the status of CVD in California.
- developing new efforts to address the issues of CVD awareness.
- partnering with the California Cardiovascular Disease Prevention Coalition and other interested organizations to reduce CVD.
- securing resources for local prevention programs.

For more information, contact Diana Cassady, DrPH, 601 North 7th Street, MS–725, P.O. Box 942732, Sacramento, CA 94234-7320; 916/324-1329; fax 914/324-7764.

Community Involvement Is "Heart" of Maine's Effort

In terms of cardiovascular disease, Maine mirrors the nation. CVD is the leading cause of morbidity and mortality in Maine, and the leading cause of years of potential life lost. It accounts for one-fourth of all Medicaid costs in the state. But Maine has no county and only three local health departments through which local prevention programs could be funded, and it is predominantly rural, making it hard to find places to exercise. The economy is poor, and many residents have lost both jobs and health insurance. The long winters contribute to a high rate of inactivity; 60 percent of adults are inactive, with similar habits among young persons. And in 1995, Maine ranked first in the nation for tobacco use among the 18–34 age-group.

The state battle against CVD will be won or lost on the local level, Patricia R. Jones, MPA, Program Manager, Community Health Promotion and Chronic Disease Prevention, Maine Department of Human Services, will tell you firmly. She says that community involvement is the key to the state's approach, with an emphasis on community-based interventions. CVD risk reduction programs are among those funded through the Preventive Health and Health Services Block Grant from the CDC. Funding from a major tobacco excise tax passed in June 1997 will be used for a statewide media campaign promoting tobacco nonuse and for community-based interventions.

Ms. Jones cites three community-based studies by the National Heart, Lung, and Blood Institute and the CDC's PATCH (Planned Approach to Community Health) model in support of the focus on community involvement. These models emphasize community participation and empowerment, local data analysis and problem identification, multiple intervention strategies, and continuous monitoring of progress.

"By reaching not only individuals at risk, but also their friends, family, churches, worksites, schools, and recreational programs, we can affect the environment in ways that make it easier for the individual to make positive behavior changes."

The state is committed to community-based approaches that focus on multiple interventions and multiple segments of society, not on individuals. Maine's approach to reducing the risk of heart attack and stroke has evolved from a single risk factor approach (community hypertension programs) to a multiple risk factor approach (adding cholesterol screening, smoking prevention, and nutrition education) to the current community-based model. Community environmental change and policies that support good nutrition, nonsmoking, and physical activity are key components of the program.

"The point of using a community approach and multiple levels of intervention is to get the community involved in developing solutions to problems such as obesity, physical inactivity, and tobacco use. By reaching not only individuals at risk, but also their friends, family, churches, worksites, schools, and recreational programs, we can affect the environment in ways that make it easier for the individual to make positive behavior changes," said Ms. Jones. Communities are encouraged to develop a checklist of questions: Is our community a healthy environment? Are heart-healthy foods offered in the school cafeterias and restaurants? Are there daily opportunities for students and other residents to exercise?

Because of limited funding, prevention efforts rely on coalitions with groups such as the Maine Cardiovascular Health Council, which includes managed care providers, private corporations, schools, occupational nurses, physicians, physical education specialists, and nutritionists. The state works with the Council to promote tobacco nonuse, nutrition, and physical activity. The Maine Nutrition Network, funded by the U.S. Department of Agriculture through the Maine Bureau of Health, provides training to schools throughout the state.

Despite these efforts, the program lacks personnel and funding. More surveillance of morbidity of heart disease is needed. A

newly assigned CDC epidemiologist will be helpful. Assistance is also needed in policy analysis and program evaluation.

For more information, contact Patricia R. Jones, MPA, Maine Department of Health and Human Services, 151 Capitol Street, Station 11, Augusta, ME 04333; 207/287-5180; fax 207/287-4631.

Revisiting the Missouri Bootheel Heart Health Project

A community-based risk reduction project has helped residents in the Bootheel, a medically underserved rural area in southeastern Missouri, lower their risk of CVD by using intervention activities to alter lifestyle behaviors.

In 1989, in cooperation with the CDC, the Missouri Department of Health began a CVD reduction project known as the Bootheel Heart Health Project. High mortality rates for coronary heart disease deaths were found in five of the six counties that make up the Bootheel. The Missouri Department of Health knew something had to be done to lower the prevalence of CVD in this predominately black populated area characterized by high rates of poverty and low-educational levels.

"To reach our audience, the state teamed up with the community, and a total of 17 subcoalitions were organized to coordinate intervention activities in their local area. Each of the 6 counties received $5,000 to help implement the program, " said Cynthia Dean, Field Coordinator, Missouri Department of Health. Examples of coalition projects include these:

- annual heart health fitness festivals that involved exercise demonstrations, registration for exercise classes and walking clubs, and screening for hypertension, diabetes, and cholesterol.
- "High Blood Pressure Sunday" where ministers included heart disease education in the sermon, the congregations were screened for hypertension, and heart health dinners were served in the church.
- poster contests were sponsored by local schools and the winning entries were featured in local newspapers.
- the Heart Healthy Corner, a weekly newspaper column on heart disease prevention, featured news and tips written by coalition members.

"After we evaluated the 5-year program, we found that cholesterol screening had increased and physical inactivity decreased in communities where heart health coalitions were developed," Ms. Dean said. (See related story "Missouri Builds Heart Health Coalitions in the Bootheel," *cdnr*, Volume 6, Number 2, p. 11.)

CDC is currently working with one of our Prevention Centers, the St. Louis University School of Public Health to study the determinants of physical activity among African-American, Hispanic, Native American, and low-educated Caucasian women between 40 and 75 years of age. There is a high rate of physical inactivity in these target populations, as well as health problems (including CVD). The barriers and facilitators of physical activity among women are being evaluated through focus groups and telephone interviews. "We hope the more than 3,000 telephone interviews will obtain information on the women's determinants of physical activity, as well as other health practices such as smoking status and nutritional choices," said David R. Brown, PhD, Behavioral Scientist with the NCCDPHP's Division of Nutrition and Physical Activity. "We will use this information to develop environmental interventions, such as building walking trails to encourage women to become more physically active, to be implemented in the Ozark and Bootheel regions of Missouri."

Even with modest resources, community-based interventions show promise in reducing self-reported risk for cardiovascular disease within a relatively brief period.

For more information, contact Cynthia Dean, Missouri Department of Health, 2875 James Boulevard, Poplar Bluff, MO 63901; 573/840-9720.

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Health Observances

- ***American Heart Month*—February**
  American Heart Association
  800/AHA-USA1
- ***National Children's Dental Health Month*—February**
  American Dental Association
  800/947-4746
  312/440-2758
- ***Wise Health Consumer Month*—February**
  American Institute for Preventive Medicine
  248/539-1800
- ***National Nutrition Month*—March**
  American Dietetic Association
  312/899-0040
- ***National School Breakfast Week*—March 1–7**
  American School Food Service Association
  800/728-0728
  703/739-3900
- ***American Diabetes Alert*—March 17**
  American Diabetes Association
  800/Diabetes
- ***Cancer Control Month* —April**
  American Cancer Society
  800/ACS-2345
  404/320-3333
- ***National Public Health Week*—April 6–2**
  American Public Health Association
  202/789-5600

Plan Ahead for the Health Education and Health Promotion Conference

The National Conference on Health Education and Health Promotion and the Midyear Scientific Meeting of the Society for Public Health Education will be held the week of May 18, 1998, in San Antonio, Texas. This meeting is cosponsored by CDC, the Association of State and Territorial Directors of Health Promotion and Public Health Education, and the Society for Public Health Education.

For more information, contact John Korn, Division of Adult and Community Health, NCCDPHP, CDC, Mail Stop K–30, 4770 Buford Highway, NE, Atlanta, GA 30341-3717; 770/488-5427.

DRH's 30th Anniversary Commemorated

The Division of Reproductive Health, NCCDPHP, CDC, recently celebrated 30 years of improving women's and children's lives through reproductive health research and assisting public health programs. Special guests including current and former employees who have worked on family planning evaluation and reproductive health issues dating back to 1967 attended the agency wide ceremony.

"CDC can point with pride to the accomplishments of the Division of Reproductive Health and its predecessor, the Family Planning Evaluation Division. From family planning to reproductive health, dedicated employees have for 30 years set the gold standard for providing a solid scientific and epidemiologic basis for public health decisionmaking in reproductive health," said James S. Marks, MD, MPH, Director, National Center for Chronic Disease Prevention and Health Promotion, and former Division of Reproductive Health Director.

New Director Takes Reigns at DNPA

William H. Dietz, MD, PhD, has assumed duties as Director, Division of Nutrition and Physical Activity, NCCDPHP. Before joining CDC, Dr. Dietz was Professor of Pediatrics at the Tufts University School of Medicine and Director of Clinical Nutrition at the Floating Hospital of New England Medical Center Hospitals. He received his MD from the University of Pennsylvania in 1970. Following an internship at Children's Hospital of Philadelphia, he spent 3 years studying insect-borne viruses in the Middle America Research Unit of the National Institute of Allergy and Infectious Disease in Panama. After completing his residency at Upstate Medical Center, he received a PhD in Nutritional Biochemistry from the Massachusetts Institute of Technology (MIT).

In addition to Dr. Dietz's academic work, he has been Associate Director of the Clinical Research Center at MIT and the Director of the Boston Obesity/

Nutrition Research Center. He is vice president-elect of the American Society for Clinical Nutrition and is past president of the North American Association for the Study of Obesity. In 1995, he received the John Stalker Award from the American School Food Service Association for his efforts to improve school lunches.

Joint Physical Activity and Nutrition Project Aims to Improve Health of Young Persons

The Centers for Disease Control and Prevention, the CDC Foundation, Emory University's Nutrition and Health Sciences Center, and the International Life Sciences Institute have joined together for a common mission: to improve the health of our nation's young people through promoting physical activity and healthy diets. Called PAN for short, "Improving Child and Adolescent Health through Physical Activity and Nutrition" represents the first national effort of its type. The project's key goals are to increase knowledge about physical activity and nutrition; develop community interventions; and share knowledge gained through research and interventions.

For more information, contact Charlene Burgeson, MA, or Katy Curran, MS, ATC, Division of Nutrition and Physical Activity, NCCDPHP, CDC, Mail Stop K-46, 4770 Buford Highway, NE, Atlanta, GA 30341-3717; 770/488-5692; E-mail ctb9@cdc.gov or kgc6@cdc.gov.

CDC Cited for Breast Cancer Control Programs

On October 8, 1997, CDC received the 1997 National Breast Cancer Awareness Month (NBCAM) Government Leadership Award for excellence in breast cancer control through the implementation of the National Breast and Cervical Cancer Early Detection Program at the annual NBCAM Profiles in Progress awards dinner and ceremony in Chicago. The Profiles in Progress Awards recognize excellence in breast cancer awareness and early detection programs and the awards dinner serves as the kick-off event to each year's high-profile NBCAM campaign. Louise Galaska, MPA, Deputy Director, Division of Cancer Prevention and Control, NCCDPHP, accepted the award on behalf of CDC.

NCCDPHP's Director Addresses Arthritis Foundation National Meeting

James S. Marks, MD, MPH, Director, NCCDPHP, was a featured speaker at the 1997 Arthritis Foundation National Meeting, held in Denver, November 13–15. His talk centered on the recently announced collaboration between CDC and the Arthritis Foundation that is focusing on creating a national arthritis action plan. This effort will include representation from states, health care purchasers, voluntary groups, and academic institutions. Arthritis is the leading cause of disability in the United States and the second leading cause of work disability.

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NCCDPHP Internet website: http://www.cdc.gov/nccdphp/nccdhome.htm

Marketing Kit Available for CDC's New Physical Activity Initiative

In August 1997, the Centers for Disease Control and Prevention launched a new initiative that highlights simple ways people can incorporate physical activity into their daily lives. The "It's Everywhere You Go" kit contains information on social marketing, profiling the target audience, working with the media, and developing local events. Camera ready print and radio public service announcements and a video featuring Olympic gold medal speed skater Dan Jansen are also included. All of these materials can be personalized with local information, and are now available on the Internet at http://www.cdc.gov/nccdphp/dnpa/readyset.

With this and other efforts, CDC hopes to help inactive Americans achieve 30 minutes of moderate physical activity a day, 5 or more days of the week.

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