

Special Focus: Health-Related Quality of Life, Part I

Health-Related Quality of Life Reveals Full Impact of Chronic Diseases

Interest in health-related quality of life (HRQOL) is soaring because Americans are living longer and want to stay healthy and active for as long as possible. As CDC epidemiologists and behavioral scientists learn more about quality of life, their findings offer hope to people with heart disease, arthritis, diabetes, and other painful, debilitating conditions.

Heart Disease and Stroke

Half of all people who have a heart attack will survive it, but they might end up with a weakened heart and shortness of breath. “Even taking a shower by yourself, walking to the mailbox, or lifting your grandchildren—to be able to do these things, you have to have a healthy heart,” said George A. Mensah, MD, FAAC, chief of CDC’s cardiovascular health program and the state heart disease and stroke prevention program.

CDC’s quality of life research focuses on all aspects of cardiovascular disease—how it affects a person’s ability to work and perform activities of daily living and how quality of life is affected by the cost and side effects of medications; affordability of care; access to good care; and caregiver and family issues. “We

see it as not just the condition but everything that’s associated with it,” explained Kurt J. Greenlund, PhD, a CDC epidemiologist specializing in cardiovascular health.

People who have had a heart attack or stroke tend to report fewer healthy days than people who haven’t had such an event, according to Dr. Greenlund. Even people who have not had a heart attack or stroke but have risk factors—high blood pressure, high blood cholesterol, tobacco use, obesity, and diabetes—tend to report fewer healthy days than others, he added.

Thankfully, the devastating effects of cardiovascular disease can be averted, Dr. Mensah said. The first step is to let people know what they can do to reduce their risk—for example, regularly check and control their blood pressure and blood cholesterol, avoid using tobacco, exercise regularly, and eat nutritious foods.

“Few people realize that even when they do all the right things, they may still be at risk for heart disease and stroke,” cautioned Dr. Mensah. “Public health agencies must get the message out about what to do if you develop chest pains. People from all

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We're Living Longer, But What About Our Quality of Life?

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As a nation, we invest heavily in the development of new technologies that will help us live longer. We spend much of our health care budget on the last few months or years of people's lives. And when we collect health data, the outcome we measure most often is the number of years lived.

This focus on length of life reflects how we, as a society, have kept score of our nation's health and how we have spent our resources. There's nothing wrong with that, except that there's so much more to life and health.

Health is more than just a means of living longer. The real purpose of health is to allow a more satisfying and meaningful life, to enjoy a higher quality of life. We can view quality of life in terms of physical pain or depression. We also can look at how health determines whether we can work, maintain activities of daily life, remain independent for as long as possible, or have the time to get to know our grandchildren.

Quality of life is fundamentally a public health issue. Achieving a high quality of life is tied heavily to chronic diseases and the aging of the U.S. population. People are living longer with chronic illnesses such as cancer and diabetes. They need help coping with the ways their lives are altered by disease. As our population ages, we also are seeing rapid increases in diseases like arthritis, which can be devastating and debilitating if they are not well managed.

Clearly, we can be doing much more to improve health-related quality of life for all people in the United States. To make sure we spend our scarce resources wisely, we must find feasible ways to measure health-related quality of life. It must become a core means of measuring progress on health. Clinicians have helped lead efforts to make these methods more widely considered, initially as outcomes in clinical research.


At the state and national levels, we must continue monitoring how people's behaviors, risks, and illnesses affect their quality of life on a populationwide

basis. Data from CDC's Behavioral Risk Factor Surveillance System (BRFSS) strongly suggest that people with a poor quality of life are more likely to smoke, binge drink, have unhealthy diets, and be physically inactive than people with a better quality of life. The data also suggest that these individuals are less likely to seek preventive care or to use safety belts. This information can be useful when planning health promotion programs that target risk behaviors.

We also need to look at broader community measures. Recent studies suggest that quality of life may be associated with access to parks, walking trails, and other safe areas for physical activity. As we learn more, we can use our findings to develop interventions that will improve people's quality of life and then evaluate these efforts to make sure they are working. This knowledge also can be used to influence policies that will specifically promote health-related quality of life.

Tracking health-related quality of life over time can help us better understand how the nation's health is influenced by not only broad health and social policies but also disasters such as heat waves, cold snaps, floods, and even terrorist threats. Because surveillance for health-related quality of life uses broad and sensitive measures, it can detect health problems that might not be captured by morbidity or mortality surveillance.

In the United States, we are fortunate that we can now look beyond extending life and focus on health-related quality of life. As a society, we are finding it easier to question why we invest so much of our health care resources at the end of life and why we are not spending more to improve our quality of life.

Quality of life issues will certainly affect the future course of public health in this country. People are asking for it, communities are asking for it, and clinicians are asking for it. And those of us in public health are pushing for it to become more prominent on our nation's agenda. 

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walks of life must understand the need to call 9-1-1 right away and get to the emergency room as soon as possible.” By arriving at a hospital within 1 hour after chest pains begin, a person can get appropriate medical treatment, such as the use of the clot buster, a drug that can actually prevent a heart attack or stroke, he explained. Receiving this drug in a timely manner can significantly improve quality of life.

People can safeguard their quality of life by making healthy lifestyle choices, but even more can be done through policies and environments that support healthy behaviors and promote quality of life for entire communities, Dr. Mensah noted. For example, some, but not all, communities have enhanced 9-1-1 emergency medical transport services as well as fire stations and pharmacies that offer free blood pressure checks, health fairs where free cholesterol screenings are available, walking trails, no-smoking policies, smoking cessation services, and accessible grocery stores stocked with fresh, affordable fruits and vegetables. Large, population-based efforts such as these are much more effective than just telling a person to stop smoking, to eat fresh fruits and vegetables, or to exercise, Dr. Mensah said.

To increase people’s knowledge about these health issues and promote behavior changes, public health agencies must use aggressive communication strategies to get the word out that such services can make a big difference in the quality of people’s lives. “A very well-informed, educated public can be a strong stimulus and a

powerful catalyst for promoting the policy and environmental changes that we, in public health, know can improve quality of life,” Dr. Mensah said. “For far too long now, we’ve blamed individuals, many who lacked the basic knowledge and access to services needed to make healthy lifestyle choices. Now we need to promote policy and environmental changes to help people lead heart-healthy lives.”

“Few people realize that even when they do all the right things, they may still be at risk for heart disease and stroke.”

Arthritis

Nearly 70 million U.S. adults have arthritis or chronic joint symptoms—pain, aching, stiffness, or swelling in or around their joints. For people with arthritis, quality of life issues such as pain and loss of function are far more relevant than death because arthritis rarely kills. “Although some types of arthritis can cause death,

Core Healthy Days Measures

1. Would you say that in general your health is excellent, very good, good, fair, or poor?
2. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?
3. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
4. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities such as self-care, work, or recreation?

that outcome is dwarfed by the huge impact arthritis has on outcomes like pain and function—an impact that makes arthritis the leading cause of disability in the United States,” said Charles G. Helmick, MD, a medical epidemiologist with CDC’s arthritis program.

“We’ve analyzed Behavioral Risk Factor Surveillance System data from 15 states and Puerto Rico. It’s what you might expect: People with arthritis have worse health-related quality of life than those without arthritis. In fact, they’re doing much worse,” said Dr. Helmick. These findings are guiding CDC’s future research questions.

Arthritis

Nearly 70 million people in the United States have arthritis or chronic joint symptoms such as pain, swelling, or stiffness. As the U.S. population ages, this number is likely to increase dramatically.

Arthritis is the leading cause of disability in this country. It limits daily activities—such as walking, climbing stairs, bathing, and dressing—for more than 7 million Americans.

Arthritis affects quality of life for people of all ages, not just older adults. Nearly two-thirds of people with arthritis are under the age of 65.

People with arthritis have a much worse health-related quality of life than people without the disease. For example, in the 1996–1998 Behavioral Risk Factor Surveillance Surveys, U.S. adults with arthritis reported 4.6 more physically and mentally unhealthy days a month than those without arthritis.

People can take steps to reduce the effects of arthritis on their quality of life. For example, the Arthritis Self-Help Course, available from the Arthritis Foundation, teaches people in 6 weeks how to manage their arthritis and lessen its effects through nutrition, physical activity, relaxation, and other strategies. Researchers followed participants for 4 years and found that the course could reduce the pain of arthritis by 18%.

“We’re now asking: Why is this happening? Is it pain? Is it loss of function? Is it comorbidity—arthritis combined with diabetes, for example?”

Dr. Helmick and his colleagues also have identified several groups of people who are hurt the most by arthritis: people aged 45–64 years, blacks and Hispanics, and adults with less than a high school education. Again, CDC researchers want to find out why. “It could be physician issues. Or it could be related to differences in social support, education, or self-efficacy—the belief that you can do the things required to manage your disease,” Dr. Helmick explained.

Many older people with arthritis think the pain and loss of function is just a natural part of aging and do not realize that their quality of life is slowly eroding, noted James S. Marks, MD, MPH, Director of CDC’s National Center for Chronic Disease Prevention and Health Promotion. “They’ve made accommodations for the disease. Perhaps they don’t take walks in the neighborhood anymore,” he explained. “And yet probably more could be done to help these people feel better and maintain their function.”

Diabetes

Diabetes can be devastating to a person’s quality of life. “First, there’s the impact of the diagnosis,” said K.M. Venkat Narayan, MD, MPH, MBA, a medical epidemiologist with CDC’s diabetes program. “People are afraid when they first learn they have diabetes.”

Then comes the stress and frustration of having to manage the disease.

“Rather than play golf, you have to go to the doctor,” Dr. Narayan said. “You must deal with daily self-management of this disease. Diabetes alters your diet. You must take lifelong medication.” Even more devastating are the complications that diabetes can cause: blindness, kidney disease, heart disease, circulatory problems that can result in amputation, and cognitive decline.

To help people with diabetes, CDC has supported three National Institutes of Health (NIH) studies that address quality of life: the Diabetes Prevention Program clinical trial, the Look Ahead study of weight loss, and the Action to Control Cardiovascular Risk in Diabetes (ACCORD) study, which looked at the effects of reducing cardiovascular disease risk among people with diabetes. In addition, CDC is the lead agency for the Translating Research Into Action for Diabetes (TRIAD) study, which involves NIH and the Veterans Administration (VA). Participants include 12,500 people with diabetes plus 2,000 people in VA hospitals. The study aims to identify the barriers that block people from getting currently available treatment for the complications of diabetes.

In each of these studies, CDC has promoted quality of life—“first,

Diabetes

More than 17 million people in the United States have diabetes, and an estimated 16 million more people are at high risk of developing the disease.

For people with diabetes, quality of life can be marred by depression, heart disease, stroke, blindness, and amputation of the legs, feet, and toes.

People with diabetes report having more disability, poorer health status, less income, and less access to care than those without the disease, according to data from the 1990–1995 Oklahoma Behavioral Risk Factor Surveillance Surveys.

Health-related quality of life is far worse for people with diabetes than for those without the disease. In the 1993–1996 Behavioral Risk Factor Surveillance Surveys, U.S. adults with diabetes reported nearly 10 physically unhealthy days a month, compared with 5.1 physically unhealthy days a month for those without diabetes.

because it is important to know how diabetes affects quality of life and secondly, because it’s a matter of economics,” said Dr. Narayan. “Very few medical treatments save money, so we’ve asked: Are we improving quality of life? For every dollar spent, what will give you more quality-adjusted life years (QALYs)? It’s not about saving money,” he said. “It’s about spending money wisely, getting the best in return for your investment.”

“The earliest diabetes studies focused on mortality, asking ‘Does treatment prevent death?’ Then the

Quality-Adjusted Life Years (QALYs)

QALYs are estimates of person-years lived at particular levels of health. They are mostly used in cost-effectiveness analyses and clinical trials involving health conditions that consider the quality as well as the length of life.

Quality is typically measured on a scale of 0.0 (death) to 1.0 (perfect health) by assigning various weights to potential health states.

Epilepsy

Epilepsy is a neurological disorder that causes recurring seizures, which affect awareness, sensation, or movement.

More than 2 million Americans have epilepsy. They often face discrimination and public misunderstanding because of the stigma associated with this disease.

Successful treatment enables many people with epilepsy to lead productive lives, but almost 40% of people with epilepsy continue to have seizures despite efforts to control seizures.

Epilepsy can disrupt or limit everyday activities such as driving, attending school, and working.

Depression is the most common condition associated with epilepsy. Up to half of people with uncontrolled epilepsy experience depression. Suicide rates among people with epilepsy are five times higher than in the general population.

Epilepsy can have a harsh effect on people's quality of life. In the 1998 Texas Behavioral Risk Factor Surveillance Survey, people with epilepsy reported far more days of pain, depression, anxiety, and limited activity in a month than those without the disorder.

In a national survey, CDC researchers found that about one-third of all people know someone with epilepsy, but few are familiar with epilepsy or how to respond to a seizure. The proper response is to cushion the person's head if they fall; remove hazards from the area that can cause injury; not restrain the person or put anything in his or her mouth; look for some form of identification; watch the time and call 9-1-1 if the seizure lasts more than 5 minutes; and offer reassurance and help when the seizure ends. Most seizures end naturally without emergency treatment.

studies moved to morbidity, asking 'Does treatment prevent complications?' Now the focus is on quality of life, and we're asking, 'How does the person perceive quality of life?' The newest area of study is patient satisfaction," Dr. Narayan noted. Quality of life has not always been a high priority in public health, but that is changing. "We are moving in the right direction," he said.

Epilepsy

Epilepsy is a common neurological disorder throughout the world, affecting as many as 2.3 million Americans and 50 million people worldwide. Although people of all ages have epilepsy, new cases occur mostly among children and people over age 60. This complex disorder can have serious consequences (see *Epilepsy*, this page). For example, people with uncontrolled seizures have an increased risk for injury, depression, suicide, and sudden unexpected death.

"Epilepsy is not just a chronic disorder. It remains a social label, and it limits people's independence," said Rosemarie Kobau, MPH, a public health analyst with CDC's epilepsy program. Not being able to drive is one of the biggest limitations. "Most states allow people with epilepsy to drive if they have been seizure-free for a year, but they have difficulty getting auto insurance, and so they're trapped," Ms. Kobau said. "For people with no access to public transportation, that can lead to unemployment, financial hardship, and social isolation." Despite legal protections, people with epilepsy still find that they are denied coverage for health and life insurance, and people are reluctant to tell potential employers that they have epilepsy. "There is a lot of work to do to educate the public about epilepsy," she added.

The drugs used to control epilepsy can also wreak havoc on a person's quality of life. "A person with epilepsy might have only one or two seizures a year but take drugs year-round. The medications often slow down your

brain function, causing confusion, drowsiness, and lethargy,” Ms. Kobau explained. These side effects can lead to other problems that affect quality of life.

Women with epilepsy face unique challenges when planning for pregnancy. Although most babies born to women with epilepsy are normal and healthy, the disorder and epilepsy medications can pose health risks for pregnant women and their babies. In a recent study, researchers found that health care professionals had little knowledge and much uncertainty about how to care for women with epilepsy. In response, the Epilepsy Foundation has launched an initiative to educate health care professionals about women with epilepsy.

Epilepsy’s effects on quality of life also vary by age. The consequences for very young children are very different from those for older adults. Many older people develop epilepsy after having a stroke or head injury. “Imagine that you’re 62, still work, and can drive. Then all of a sudden, after you develop epilepsy, you’re told you can’t drive anymore,” said Ms. Kobau. “Your world has suddenly gotten smaller.”

The good news is that people with well-controlled epilepsy have the same quality of life as people without epilepsy, surveys have shown. “So it’s important to strive for good seizure control whether it’s through new medicines, better treatments, or more effective self-management of the disorder,” Ms. Kobau said. The goal of CDC’s epilepsy program is to improve people’s quality of life through early detection and treatment of epilepsy,

self-management of the disorder, increased knowledge about epilepsy, and strategies to combat stigma. Epilepsy affects so many aspects of a person’s life, Ms. Kobau said, and “health-related quality of life captures the full impact of this disorder on life.”

Cancer

Nearly half of people who get cancer live, and there are many more long-term survivors today than in the past. “For these people, there are lots of quality of life issues because the cancer itself is difficult, and the treatment is difficult,” said Dr. Marks.

Whether caused by cancer or chemotherapy, side effects such as pain, fatigue, depression, anemia, impotence, loss of appetite, and inability to taste or smell can be devastating. Recent research has shown that simple steps—such as enhancing the flavor of foods and providing adequate pain control—can significantly improve cancer patients’ quality of life. Cancer patients with no pain or only mild pain tend to report much better health and well-being than those with moderate or severe pain.

Studies also have shown that doctors often do not provide adequate medication to alleviate the pain experienced by people who are dying of cancer. In CDC-funded research, investigators are studying the palliative care and pain management provided in the last 6 months of life to men with prostate cancer and women with ovarian cancer. “There are times when these people are not going to have their life lengthened dramatically, and we’re not making them as comfortable as we can,” Dr. Marks said.

“These are quality of life issues that are starting to get increasing attention in the cancer community.”

Mental Health

The Global Burden of Disease project, conducted by the World Health Organization (WHO), looked at disability-adjusted life years—the severity of illness, how long it lasted, and quality of life measures. “The WHO researchers found that mental illness was among the biggest problems worldwide. It surprised everybody,” said Dr. Marks.

“The question now is what do we do, not just to treat mental illness but to improve mental health?” Dr. Marks noted. “Can we diagnose and treat mental illness early? We have to recognize mental health as an area of public health that we in chronic dis-

“The question now is what do we do, not just to treat mental illness but to improve mental health?”

ease will have to engage in. Most mental health issues are less about risk of death and more about quality of life, and they’re often related to chronic diseases.”

Mental health and chronic disease are intertwined and can trigger one another. “For example, when you learn you have diabetes, you get depressed about it. And that depression makes it harder for you to manage the lifestyle changes you need to make. There’s increasingly good evidence that depression—not necessarily diagnosed, but depressive feelings—raises the risk

of having a heart attack. For people who’ve had a heart attack, it clearly increases their risk for a subsequent attack. So quality of life affects many illnesses,” Dr. Marks explained.

In addition, people with mental illness are more likely to have chronic illness. And if they have a chronic disease, they do not seem to do as well in managing their illness.

Health-related quality of life studies also have linked depression to unhealthy behaviors such as smoking and physical inactivity. “A lot of people continue to smoke because they get depressed when they quit, and people with schizophrenia or depression tend to smoke more than others,” said CDC medical epidemiologist Matthew M. Zack, MD, MPH. “People who become more physically active tend to experience better HRQOL. We don’t know what comes first.”

Regardless of whether healthy behaviors lead to improved quality of life or vice versa, “when developing interventions, we need to take these mental health and HRQOL factors into account,” Dr. Zack suggested. The result could be better patient compliance, lower rates of relapse, and a better quality of life.

From a physician’s point of view, health-related quality of life opens the door to better relationships with patients and better outcomes. In the past, physicians have been taught to rely more on laboratory data and less on what their patients say. “More and more, health-related quality of life will mean listening to how patients feel about their physical and mental health,” said Dr. Zack. “When you

listen, the patient comes to trust you, and you might find out a lot of useful things—like whether or not he’s tak-

ing his medications. You’re more likely to find out what’s happening, the whole story.” ☀

HRQOL Measures Can Help Track Health as Population Ages

Life expectancies increased dramatically during the last 100 years and are projected to continue rising into the 21st century. Although longer life spans indicate success in many areas, including public health, they also bring new challenges.

If a greater proportion of a country’s population is 65 or older, greater demands are placed on public health, medical, and social service systems. Adult rates of chronic diseases, which affect older adults disproportionately, also are likely to increase—contributing to greater disability, diminished quality of life, and increased health care costs.

Thus, the new challenge for the public health community is to help people live healthier lives, not just longer ones, despite the cumulative effects associated with normal aging or disease progression.

Fortunately, health care practitioners and policy makers can now use health-related quality of life (HRQOL) measures to identify and track the health status and service needs of older adults, particularly vulnerable subgroups. Then, they can develop and support programs that minimize the effects of chronic disease and disability, maintain the ability of older adults to live independently, and improve quality of life.

“It’s the most important outcome to measure for any kind of health-related program involving older populations,”

said David Moriarty, BS, a program analyst and aging studies specialist who coordinates CDC’s HRQOL assessment program. “If people say that they’re not feeling well in a population survey, it can be useful to planners because it indicates demand for health services and possible opportunities for prevention.”

“And older people are very interested in the issue of quality of life,” he added. “They don’t want to live forever, but they want to feel healthy and able to function.”

HRQOL is a broad and complex concept that encompasses both physical and mental health. In 1993, CDC’s Behavioral Risk Factor Surveillance System (BRFSS) added four HRQOL questions designed to measure self-perceived health and the number of recent days of poor physical health, poor mental health, and activity limitations (see page 3 for complete list of questions).

These questions have since been added to several other national, state, and local surveys, including the physical examination portion of CDC’s National Health and Nutrition Examination Survey (NHANES) and the Medicare Health Outcomes Survey (HOS) component of HEDIS 2003. HEDIS (Health Plan Employer Data and Information Set) is the most widely used set of performance measures in the managed care industry; it is

supported by the National Committee for Quality Assurance.

“It’s very significant that the CDC measures were added to HEDIS because it’s generally regarded as the standard for measuring health care quality,” Mr. Moriarty said. “Because managed care plans change so much, it’s important to understand the community context for population health. Now, the Centers for Medicare and Medicaid Services, which uses HOS

“HRQOL measures are a very good way to measure the perceived burden—both physical and mental—of conditions like arthritis.”

extensively to assess the effectiveness of Medicare managed care plans, will be able to compare data from this survey with populationwide data on health-related quality of life.”

Self-Rated Health Supports Other Disease Measures

Research has shown that self-perceptions of health predict mortality, morbidity, and future use of health care services. Such information is useful for tracking the perceived burden of chronic diseases or conditions (e.g., diabetes, arthritis, heart disease, cancer, dental disease) and their risk factors (e.g., obesity, physical inactivity, tobacco use, alcohol use) among older adults. For this population, chronic diseases and their related activity limitations are a major health problem, and studies have linked these conditions with lower HRQOL.¹

For example, arthritis and chronic joint symptoms are the leading cause of disability in the United States, affecting 70 million adults in 2001.² Prevalence increases with age, affecting approximately 60% of people 65 years and older.

“People don’t die of arthritis, but it’s a very prevalent condition that has a substantial effect on people’s health,” Mr. Moriarty said. “HRQOL measures are a very good way to measure the perceived burden—both physical and mental—of conditions like arthritis. They can also help identify high-risk groups for targeted interventions.”

Health care officials in Missouri who helped pilot test the HRQOL measures in the early 1990s—including an optional survey module with questions specific to arthritis—have continued to use them in state, regional, and county surveys. They also have used a 10-question module created by CDC in 1995 that asks additional questions on activity limitation and recent days of pain, depression, anxiety, sleeplessness, and vitality. (In 2000, half of all states had used the optional module.)

“We found that the questions worked and that people liked them,” said Jeannette Jackson-Thompson, PhD, MSPH, operations director for the Missouri BRFSS program. “The average person can’t always understand why we’re asking some of the questions that we ask, or they have no interest in them. But, ‘How’s your health?’ That’s something everybody can relate to.”

Mr. Moriarty and Dr. Jackson-Thompson agree that the HRQOL measures are not meant to stand alone but to complement other health

indicators. And because self-rated health is subjective, results must be validated against more objective data such as physician visits, hospital records, and mortality data.

In 1998, CDC conducted a study in Missouri that validated the core HRQOL questions and the optional 10-question module against the widely used Medical Outcomes Study Short Form 36 (SF-36).³ Dr. Jackson-Thompson said this study was important because it showed that the HRQOL measures can be used in place of the longer SF-36, which is widely used by hospitals.

In 1999, researchers contacted a sample of BRFSS participants in Missouri about 2 weeks after the initial survey and asked them to retake the four HRQOL questions.⁴ The reliability of the measures was rated as moderate to excellent overall, but slightly lower for older adults. Because health can change over time and because older adults often have more chronic conditions and variable health, researchers were not surprised by the lower reliability for this population.

A recent Pennsylvania study showed that HRQOL measures can predict short-term and long-term physician visits, hospitalization, and mortality among older adults, even after controlling for demographic factors and comorbidity.⁵

“This study shows the importance of these measures as predictors of future health events, which makes them useful for planning, for identifying potentially unmet health needs, and for identifying disparities within populations,” Mr. Moriarty said.

HRQOL measures also have been adopted in other countries (e.g., Norway, Sweden, South Africa, China), and a recent Canadian study noted their ability to identify health trends, high-risk groups, and relationships between health and its determinants.⁶ The study supported inclusion of these measures in both national and local health surveys in Canada.

Lower Income and Education Linked to More Unhealthy Days

HRQOL measures help create a more complete picture of the health of older adults—both the overall population and specific high-risk groups that need targeted interventions.

For example, a CDC analysis of 1993–1997 BRFSS data found that the number of U.S. adults aged 55 or older who reported fair or poor health (as opposed to good, very good, or excellent) increased as people aged (Table 1).¹ Older adults also reported more recent unhealthy days, from a mean of 5.0 days for men aged 55–64 years to 7.2 days for women older than 75.

This study also showed that people with lower socioeconomic status tended to report more unhealthy days. Groups that consistently rated their health as fair or poor included black or Hispanic adults and people who had less than a high school education, earned less than \$15,000 a year, were unable to work, did not have health care coverage, lived in the South, reported diabetes or consistently high blood pressure, were underweight or overweight, were current smokers, or did not participate in leisure-time activities.¹

Unexpectedly, people in their pre-retirement years (aged 55–64) who were unemployed and had lower levels of income and education reported more unhealthy days than their peers aged 65–74.¹ In contrast, people with the highest socioeconomic status reported more unhealthy days as they aged. These findings indicate that

HRQOL disparities become less pronounced with age, possibly because people’s access to health and social services improves when they become eligible for Medicare, social security, and other retirement benefits.

“One explanation is that a number of low-income people are developing health problems that might benefit

Table 1. Percentage of older adults who reported fair or poor health—United States, Behavioral Risk Factor Surveillance System, 1993–1997

Characteristics	Age Group					
	55–64 yrs (n = 64,919)		65–74 yrs (n = 67,469)		≥75 yrs (n = 46,458)	
	Men(%)	Women(%)	Men(%)	Women(%)	Men(%)	Women(%)
Total	21.1	20.8	25.9	26.5	32.8	34.4
Race/Ethnicity						
White	19.8	18.3	24.7	24.6	32.1	33.5
Black	31.4	36.5	39.8	43.3	42.8	46.5
Asian/Pacific Islander	16.3	19.3	22.1	18.2	25.6	28.6
Native American/ Alaska Native	23.2	44.1	32.5	42.0	48.7	38.9
Hispanic	33.9	37.3	32.7	39.3	39.5	45.8
Education Level						
Less than high school graduate	42.2	43.5	40.7	42.4	43.3	44.8
High school graduate	21.7	19.5	25.9	24.9	30.7	32.7
Some college	17.9	14.4	22.1	19.2	29.0	27.2
College graduate	9.6	8.5	13.3	13.1	23.1	22.3
Annual income						
<\$15,000	51.1	44.3	42.8	38.1	42.9	41.6
\$15,000–\$24,999	28.8	22.5	30.3	25.7	34.2	31.7
\$25,000–\$34,999	21.2	16.1	19.6	18.0	25.3	25.5
\$35,000–\$49,999	14.4	10.5	13.6	13.8	24.6	22.5
>\$50,000	10.8	13.3	17.3	26.3	27.3	32.2
Employment						
Employed	12.6	11.3	15.1	13.8	17.2	15.0
Out of work	32.0	31.9	31.2	30.2	52.7	29.1
Homemaker	37.3	22.4	*	28.1	*	34.3
Retired	23.2	20.0	26.5	26.1	33.4	34.0
Unable to work	79.3	75.5	75.0	74.3	64.4	73.5

* Data not reported when the standard error was >30% of the prevalence estimate.

Source: MMWR 1999;48(No.SS-8):131–56

from treatment and full access to care that they aren't getting now," Mr. Moriarty said. "This could be an example of how the HRQOL measures reflect the benefit of some of our health and social programs."

Mr. Moriarty said the high numbers of unhealthy days (both mental and physical) for people aged 55–64 were a surprise, so a research fellow was asked to reanalyze the numbers. Targeting this subpopulation and identifying the factors contributing to the health status of its members could help address unmet health needs.

The reanalysis performed by Hatice Zahran, MD, MPH, an Association of Teachers of Preventive Medicine fellow, confirmed the initial findings. Dr. Zahran noted that the number of unhealthy days also was high for people aged 45–54 who earned less than \$15,000 a year. Her initial findings indicated that two key factors appeared to contribute to the high numbers of unhealthy days—unemployment and limitation of activity because of impairment or health problems.

Several state studies have also identified disparities in the self-reported health of certain populations. In North Carolina, researchers combined mortality data and HRQOL data to calculate healthy life expectancy (i.e., the number of years of life remaining in good perceived health) for a sample of the population.⁷ For minority populations in the state—mainly African Americans—life expectancies were shorter (from 79.6 years for white females to 68.0 years for minority males), and the number of years spent with health problems or

activity limitations was much higher (from 10.6 for white males to 16.5 for minority females).

Data such as these are vital to identifying and eliminating disparities among populations, which is one of the two overarching goals of *Healthy People 2010*.

"Besides being a good overall measure of health, HRQOL allows you to look at the health of subpopulations and compare it with information on access to care, unmet service needs, income, and a variety of other factors," Dr. Jackson-Thompson said. "So, for example, if people with low incomes have more unhealthy days, politicians and planners and policy makers can understand that and, in turn, support appropriate interventions to address this problem."

Addressing Mental Health and Institutionalized Populations

An important feature of CDC's HRQOL measures is that they attempt to record people's perceived mental health, an area often overlooked in other surveys. Measuring stress and mental distress can predict occurrence of disease and use of health services, which helps researchers gauge people's overall quality of life.

"Traditionally, less attention has been paid to the importance of stress, anxiety, and pain than on well-being in the general population," Dr. Jackson-Thompson said. "HRQOL can increase recognition of the importance of measuring mental health."

Analysis of 1993–1997 BRFSS data indicates that nearly one-third of Americans reported problems with

their mental or emotional health, including 11% who said their mental health was not good more than 7 days a month.⁸ As with the other HRQOL measures, socioeconomic status plays a major role. People who are unemployed, unable to work because of disabilities, or without health insurance suffer the most days of poor mental health.

On a positive note, mental health appears to improve with age: people 75 or older report fewer days of poor mental health than younger adults (1.9 compared with 3.4 for those aged 18–24).⁸ Mr. Moriarty said he believes that older people often have better coping skills because of their past experiences, as well as stronger social and spiritual supports, all of which improve their mental health.

But researchers and analysts must watch for “frequent mental distress,” defined as 14 or more days during the previous 30 days when mental health was not good. When people report numbers this high, more serious problems, such as depression, are suspected. Identifying depression in older populations can be more difficult, in part because of patient denial and inexperienced screeners in primary care settings.

One area where health status data are lacking, however, is for people who reside in nursing homes or assisted living facilities. This is because the BRFSS surveys only non-institutionalized adults.

The best source of current data is the Minimum Data Set (MDS), a questionnaire that routinely assesses the functional needs of residents in nursing homes and community care pro-

grams that receive Medicare or Medicaid funding. The MDS includes a question on self-rated health, which allows researchers to make some inferences about these populations and how they might answer the other three BRFSS questions.

States can add their own questions to the MDS, and the HRQOL measures could be added as well.

“It would be the easiest survey to attach our questions to because it goes to all nursing home populations,” said Matthew M. Zack, MD, MPH, a CDC medical epidemiologist who specializes in HRQOL assessment and aging studies. “We’d start out small with a few states and see how well it worked.”

Other ways to collect data on institutionalized populations include analyzing nursing home records and allowing family members or other caregivers to rate the health of people who cannot answer questions for themselves.

The need for such data will increase as life expectancies continue to rise and the “baby-boom” generation ages, potentially increasing the demand for nursing home services and other types of long-term care. Projections for 2030 indicate that nearly 70 million U.S. residents will be 65 years or older and that about 8.5 million will be 85 years or older.⁹

If existing rates of nursing home use continue, 3 million people will be living in such facilities in 2030—nearly double the current number. People living in nursing homes are increasingly older and in worse health than previous nursing home populations

and have high rates of mental and cognitive disorders and increased need for help with activities of daily living (e.g., bathing, dressing, eating).⁹

“We would presume that this population is worse off than people living at home,” Dr. Zack said. “Right now, about 15% of the total adult population living in the community reports fair to poor health. I would expect that maybe 75% of people living in nursing homes would rate their health as fair to poor. But we aren’t capturing these people, which means that our rates for community adults underestimate how bad the health-related quality of life may be in the overall adult population.”

Fortunately, studies indicate that more people are staying healthier longer, which improves their quality of life and allows them to stay in the community longer. Many states are supporting programs that provide services to people in their homes, which is much cheaper than the skilled nursing care required in nursing homes. Other options include group homes and assisted living facilities.


Despite these positive trends, future challenges await, as growing numbers of older adults put more and more pressure on existing services. Accurate information on this population will be critical, and HRQOL measures already have proven to be a valuable tool.

“The aging network, state health departments, and national health and aging organizations need critical surveillance data on older adult health to better target their programmatic efforts,” said James S. Marks, MD, MPH, Director of CDC’s chronic dis-

ease center. “CDC is committed to developing better measures of older adult health and quality of life, providing critically needed data analyses and reports to states and communities, and better delineating existing and projected health disparities.”

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Measuring the Health of Communities

As medical and public health advances have led to longer life spans for U.S. residents, the growing number of people living with chronic health conditions has led public health researchers to concentrate on quality as well as quantity of life.

Communities that use CDC's health-related quality of life (HRQOL) measures in their local surveys will be better able to partner with state and local health groups that use community health assessments as a tool to understand and improve the health of area residents.

One example of such assessments is the Community Health Status Indicator (CHSI) Project, a collaborative effort of the Public Health Foundation, the Association of State and Territorial Health Officials, and the National Association of County and City Health Officials. Funded by the Health Services and Resources Administration, this project has identified a number of demographic, socioeconomic, and

health-status indicators of community health:

- Age distribution (percentage young and old).
- Population size.
- Population density.
- Percentage of population living below the poverty line.
- Percentage of population older than 24 without a high school diploma.
- Unemployment rate.
- Percentage of births to mothers under age 18.
- Severe work disability rate.
- All-cause death rate.

In the late 1990s, CDC researchers conducted a study that examined the relationship between many of these socioeconomic and health status indicators and the mean number of days that people over age 17 reported poor health. Using data from the Behavioral Risk Factor Surveillance System,

researchers found that HRQOL differs among U.S. counties according to county population size. The most unhealthy days were reported by people living in the most populous counties (those with more than 1 million residents), and the fewest unhealthy days were reported by people living in counties with populations between 500,000 and 1 million residents.

They also found that other indicators also might affect county-level HRQOL differences. For each CHSI indicator used, the counties that reported the lowest rates of poverty, noncompletion of high school, unemployment, severe work disability, mortality, and proportion of births to adolescents had the lowest mean number of unhealthy days overall and for almost all county sizes. The authors concluded that county health departments should include local HRQOL data and associated community indicators along with other measures they use (such as access to health care and preventive services, environmental factors, and others) to identify health issues and guide their community health improvement processes.

Communities use many different approaches to improve the health of their populations. In *Improving Health in the Community: A Role for Performance Monitoring*, the Institute of Medicine's (IOM) Division of Health Promotion and Disease Prevention describes lessons learned from a variety of community health improvement processes and how performance monitoring can help guide such processes. CDC's Healthy Days measures are included among the IOM's suggested

community performance measures. The guide also provides tools to help communities develop their own performance indicators.

Communities are finding that measuring quality of life provides useful health assessment information. Officials in Boone County, Missouri, have used the Healthy Days measures since 1993 to help identify health problems of vulnerable groups and to justify additional funding for addressing these disparities. Health planners in Hamilton, Ontario, find the HQROL measures valuable in population health assessment, and King County, Washington, uses them as important community health indicators.


Because such measures address health at the population level, they can help health officials determine whether community needs are being met. For this reason, even more communities are expected to adopt the Healthy Days measures.

Suggested Reading

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Health-Related Quality of Life Among Women

Health-related quality of life is a particularly important issue among women. Women consistently report worse health than men on the Healthy Days measures in the Behavioral Risk Factor Surveillance System (BRFSS). For example, in response to the question “For how many days during the past 30 days was your mental health not good,” in 2001 more men (71%) than women (61%) answered none, and more women (14.7%) than men (10.3%) reported 8 or more days a month of poor mental health. According to Wanda Jones, DrPH, Deputy Assistant Secretary for Health (Women’s Health) and Director of the Office on Women’s Health in the Department of Health and Human Services (HHS), several factors contribute to women’s diminished quality of life (QOL), including a longer life span, major physiologic changes unique to women, and an increased risk of being the victim of interpersonal violence.

Women, on average, can expect to live almost 6 years longer than men. Among children born in 2000, life expectancy is 79.5 years for girls and 74.1 years for boys. At least partially because of this longer life span, women’s quality of life is more likely to be compromised by diseases that are more prevalent among older people, such as diabetes, osteoporosis, Alzheimer’s disease, and osteoarthritis. These conditions not only limit function, but over time they may be life-threatening. Each of these disorders leads to increasing impairment and diminished quality of life. For example,

- Of the 10.3 million Americans with diagnosed diabetes, 8.1 million are women. The prevalence of diabetes is 2 to 4 times higher among

black, Hispanic, American Indian, Asian, and Pacific Islander women than among white women.

- Osteoporosis, characterized by the thinning and increasing brittleness of bones, affects more than 25 million Americans, 80% of whom are women. More than half of all women over age 65 suffer from this condition.
- An estimated 4 million people in the United States are victims of Alzheimer’s disease, the most common cause of dementia for people older than 65. In 1995, more than 13,600 women died of the disease. It also takes a heavy toll on the quality of life of the caregivers (primarily women) of people with Alzheimer’s.
- Nearly 26.4 million of the 42.7 million Americans with arthritis are women. It is the most common and disabling chronic condition reported by women.

Physiologic Changes Affect Women’s QOL

The three physiologic changes unique to women that affect women’s quality of life are menstruation, childbirth, and menopause. These changes can affect women’s health both physically and mentally.

Gynecological problems are common among women of reproductive age. More than 4.5 million women aged 18 to 50 report at least one chronic gynecological condition each year. Half of all women who menstruate experience some pain during menstruation, and 10% of them suffer from pain so severe (dysmenorrhea) that it interferes with their daily routine. A

large proportion of these women have uterine fibroids, endometriosis, or both, said Dr. Jones. Nearly two of every five women between the ages of 14 and 50 experience some symptoms of premenstrual syndrome (PMS)—10% with symptoms severe enough to disrupt their usual activities.

Menorrhagia, or very heavy menstrual bleeding, is a common cause of impaired QOL among women. According to Anne Dilley, MPH, PhD, of the CDC Hematologic Diseases Branch, heavy menstrual bleeding is the reason for approximately 10% of all visits to gynecologists. Many women with menorrhagia are reluctant to leave the house for a day or two each month because of self-consciousness, the potential for embarrassment, discomfort, and exhaustion related to anemia. “For women with menorrhagia, periods are a negative monthly event,” she said. In addition, menorrhagia is the primary indicator for approximately 28,000 hysterectomies performed each year, as well as for numerous other procedures.

According to Dr. Dilley, the need for many of these surgical procedures could be eliminated, and women’s quality of life improved, if the underlying cause of the heavy bleeding were accurately diagnosed. In roughly 50% of all cases of menorrhagia, the cause is unknown. However, recent research by CDC and others has indicated that at least 20% of these cases of unknown origin are due to a bleeding disorder, most often von Willebrand’s disease (VWD). People with VWD have a reduced amount of von Willebrand’s factor in their blood. Because this factor is essential to clotting, a lack of it can result in prolonged mucosal

bleeding. The disease is not unique to women, but their monthly periods cause them to be more regularly affected by VWD than men.

Diagnosis of bleeding disorders in women is complicated by the fact that hemophilia, the best known and most severe form of bleeding disorder, occurs mainly in men. For this reason, most women don’t suspect that a bleeding disorder may be the cause of their menorrhagia, and even physicians tend to drastically underestimate its frequency. A recent CDC survey asked gynecologists what percentage of cases of menorrhagia, in their opinion, are due to an inherited bleeding disorder. The average answer—less than 1%—was far from the 20% found in recent research. According to Dr. Dilley, this lack of familiarity with bleeding disorders among both women and their health care providers is largely responsible for the average 16-year interval between the onset of VWD and its diagnosis. Because VWD and other mild bleeding disorders are very responsive to treatment, diagnosis is a critical step in alleviating the effects of menorrhagia.

As part of a congressionally mandated program, CDC recently embarked on a study to reduce complications among people with bleeding disorders. The study aims to better quantify the effects of bleeding disorders on women’s quality of life and the extent to which diagnosis and treatment improves quality of life. The Healthy Days measures are among those being used in this study to detect possible improvements.

Another condition related to physiologic changes among women is urinary incontinence, which affects

13 million Americans—11 million of them women. Although half of all older adults experience episodes of incontinence, this condition is not limited to seniors. In fact, one of every four women aged 30–59 experiences urinary incontinence. Women are most likely to develop this problem during pregnancy, childbirth, and physical activity or after menopause due to weakened pelvic muscles or pelvic trauma. Urinary incontinence can result in embarrassment; loss of self-esteem; restriction of physical, social, and sexual activities; and depression.

Depression Takes a Major Toll on Women

Women may be twice as likely as men to report experiences of anxiety and depression, according to Indu Ahluwalia, MPH, PhD, a CDC epidemiologist. An estimated 12% of American women experience a major depression during their lifetimes, compared with 7% of men. This greater prevalence may be due to physiological differences, life circumstances, coping abilities, and resources, and to women being more likely to report depressive symptoms, according to Dr. Ahluwalia.

Dr. Jones offers another reason that women are more prone to depression and mental stress: Women with caregiving responsibilities are more affected by what's going on around them. As a result, concern for the well-being of their family directly affects their quality of life. "Despite the greater participation of women outside the home, women still tend to define themselves in terms of their family," said Dr.

Jones. "Multiple responsibilities, particularly when coupled with care of children or elders in the household, can be a source of increased stress and reduced quality of life."

A recent CDC study of health-related quality of life indicators among women of reproductive age (18–44 years) found that women in this age group experience a substantial amount of physical and mental distress, depression, and stress and anxiety, and a high proportion of these women do not get enough rest or sleep.

Women Are Often Victims of Violence

In addition to age-related and physiologic causes, women's quality of life can also be disrupted by violence, a major public health problem for American women. More than 4.5 million women are victims of violence each year. Of these women, nearly two of every three are attacked by a relative or someone they know. Women are 6 times more likely to be abused by someone they know than are men and 10 times more likely to be victims of sexual assault.

Women are also much more likely than men to be victims of interpersonal violence (IPV), defined as physical or sexual abuse by an intimate partner. An estimated 26%–40% of women experience IPV during their lifetime, and this estimate rises to 54% when psychological and emotional abuse is included in the definition. IPV, which has been reported to be the most common cause of nonfatal injury to U.S. women, is a major source of chronic physical and psychological problems. As Dr. Jones

points out, IPV isolates women. “As a result of the physical and mental effects of IPV, women may be unwilling or unable to leave the house or to keep medical appointments,” she said.

Are Some Women More Prone to Reduced QOL Than Others?

Socioeconomic status (SES) is an important factor in determining a woman’s quality of life, according to Dr. Ahluwalia. “Women with lower incomes and lower levels of education are much more likely to report mental distress and physical health impairment,” she said. For example, of women with less than a high school education, 18% reported frequent mental distress, and 15% reported frequent physical health impairment. In contrast, only 8% of women with a college education reported frequent mental distress, and only 4% reported frequent physical health problems. Similarly, women with incomes less than \$15,000 a year were much more likely than women with annual incomes greater than \$75,000 to report mental distress (20% compared with 8%) and physical problems (15% compared with 4%). Dr. Ahluwalia stated that these differences may relate both to differences in access to care and in resources for coping with mental and physical distress.

Dr. Jones pointed out that, because women of minority racial and ethnic groups are more likely than white women to live below the poverty level and to have less than a high school education, SES and race/ethnicity are closely intertwined. As a result, women of minority racial/ethnic groups are at increased risk for many

of the chronic diseases that affect quality of life.

Efforts Are Under Way to Improve QOL Among Women

Before effective interventions can be developed to help women improve their quality of life, data must be collected on the specific factors that affect women’s QOL. Much of what we know at this point is anecdotal rather than quantifiable, according to Dr. Jones. CDC and other agencies and offices within HHS have studies under way, and future efforts are being planned to collect these data.


Because all available data point to SES as a critical factor in determining QOL among women, HHS and its agencies are already examining new

“Despite the greater participation of women outside the home, women still tend to define themselves in terms of their family.”

approaches for improving access to high-quality health care for low-income women. For example, HHS’s Community Centers of Excellence in Women’s Health has adopted an integrated approach, offering coordinated “one-stop shopping” that covers all aspects of a woman’s health throughout her life span, including active management of the socioeconomic and cultural influences that often stand in the way of quality health care for underserved women. In addition, HHS and its agencies are supporting culturally sensitive educational programs that encourage women to take personal responsibility for their own

health and wellness. “Such programs can help us to meet the special needs of women and to improve quality of life for all women,” said Dr. Jones.

For more information, contact the HHS Office on Women’s Health,

Department of Health and Human Services, 200 Independence Avenue, SW Room 730B, Washington, DC 20201 (telephone: 202/690-7650; fax: 202/205-2631) or visit their Web site at www.4woman.gov/owh. 

Building Healthier Communities

The public health community has long recognized that changing personal health behaviors before disease develops is far better than treating debilitating diseases later in life. For some health problems, especially those related to physical inactivity, community-level interventions may be more effective in helping change health-related behaviors at the population level than physician-recommended preventive measures.

Findings from national surveys that use CDC’s Health-Related Quality of Life (HRQOL) questions are now being used along with other community indicators such as rates of suicide, alcoholism, divorce, births to teenage mothers, and unemployment to identify vulnerable subgroups and aid in planning community-level interventions to improve not only health-related quality of life, but overall population health as well.

A New Coalition Between Public Health and Urban Planners to Fight Chronic Disease

In the last decade, an important relationship has been described between health-related quality of life and com-

munity design and layout. Although the strength of this relationship has not been firmly established, community design does appear to influence health and health behaviors.

“Advocates of the new urbanism have been enumerating the effects of land use and transportation on communities for more than a decade,” wrote Richard E. Killingsworth, MPH, a former CDC staff member currently with the University of North Carolina School of Public Health, and Jean Lamming, project manager of health and land use programs at the nonprofit Local Government Commission in Sacramento, California. “Today, an old partner of planning—public health—has resurfaced and is proving to be an important asset for advancing issues of smart growth, better community design, and equitable transportation systems.”

Community planners and administrators who have access to findings from local HRQOL surveys can use these data to bolster plans for designing, upgrading, or retrofitting neighborhoods in ways that encourage physical activity and therefore decrease the population’s risk for

obesity, heart disease, diabetes, and a number of other chronic diseases.

“Changes in the community environment to promote physical activity may offer the most practical approach to prevent obesity or reduce its co-morbidities. Restoration of physical activity as part of a daily routine represents a critical goal,” wrote former CDC Director Jeffrey Koplan, MD, MPH, and William Dietz, MD, PhD, Director of NCCDPHP’s Division of Nutrition and Physical Activity, in *Focus on Livable Communities: Why People Don’t Walk and What City Planners Can Do About It*. This fact sheet lists barriers that keep people from walking. For example,

- In neighborhoods where through streets connect to multiple destinations, people walk up to three times as often as people in areas where streets “look like spaghetti,” with no direct routes for people to take.
- Areas with midblock crossings make walking more convenient than in areas with long blocks and no crossings in between.
- Windows and people along the street create a safe and pleasant place to walk, as opposed to areas with “dead wall space” and few other people around where walkers might feel vulnerable or unsafe.
- Narrow, shaded streets can slow traffic and be up to 10 degrees cooler than wide, unshaded streets, making walking far more pleasant.

In January 2002, the National Association of County and City Health Officials (NACCHO) conducted a Land Use Planning Focus Group to discuss the connections between

chronic disease prevention and land use planning. It was held in conjunction with a national conference, New Partners for Smart Growth, which addressed the link between health and the built environment.

The focus group followed its discussions by identifying ways that local public health staff can work with community planners and other stakeholders in the design of communities that encourage healthy behaviors. (For detailed information about the focus group’s findings, visit www.naccho.org/project81.cfm.) Through a cooperative agreement with CDC, NACCHO is continuing its work to address chronic disease prevention issues, particularly as they relate to nutrition and physical activity. In an initiative designed to promote changes in local community design, transportation, and architecture that increase opportunities for and remove barriers to physical activity, NACCHO is in the process of awarding grants of up to \$200,000 each to 25 community partnerships across the country. These “Active Living by Design” partnerships will develop and implement strategies that will make it easier for people to enjoy routine physical activity as part of their daily lives.

Active Community Environments Initiative (ACES)

ACES is a CDC-sponsored initiative to encourage the development of areas where people of all ages and abilities can easily enjoy walking, bicycling, and other forms of recreation, and to promote active forms of transportation like walking and bicycling. Active Community

Environments Initiative are envisioned as places that

- Support and promote physical activity.
- Have sidewalks, on-street bicycle facilities, multiuse paths and trails, parks, open space, and recreational facilities.
- Promote mixed-use development and a connected grid of streets, allowing homes, work, schools, and stores to be close together and accessible by walking and bicycling.

The development of the KidsWalk-to-School program and collaboration with public and private agencies to promote National and International Walk-to-School Day are two important ACES activities.

“At first glance, it may not appear that walking to school, to a transit stop, or to a restaurant can provide meaningful health benefits,” wrote Mr. Killingsworth and Ms. Lamming, “but the fact is that these simple, routine activities provide a tremendous opportunity to accumulate physical activity throughout the day to achieve the recommended 30 minutes of exercise. This strategy is also a better approach than advocating sports, aerobics, or weightlifting because structured activities only resonate with a small percentage of the population. ACES, on the other hand, could enable millions of sedentary Americans to integrate physical activity into their lives seamlessly.”

Program staff in the Division of Nutrition and Physical Activity have created an ACES manual to help state and local public health workers

develop similar initiatives. The program also is working in partnership with the National Park Service’s Rivers, Trails, and Conservation Assistance Program to promote the development and use of close-to-home parks and recreational facilities.

Community Initiatives

Bolstered by community health assessments that often include Healthy Days measures, many communities, as well as public and private organizations, are taking steps to help people get out of their cars and be more physically active.

- Employers, encouraged by recent changes in the federal tax code, are finding it increasingly attractive to offer incentives for not driving, such as nontaxable transit and vanpool benefits or cash incentives for employees who give up their parking spaces at work.
- In San Diego, solo drivers can pay fees for access to high-occupancy vehicle lanes; their payments then support new express transit service by buses equipped with bicycle racks.
- City planners are working with developers to create walkable, mixed-use, mixed-income communities that give their residents a neighborhood feel. For example, the Highlands Garden Village project in Denver includes single-family homes, townhomes, cohousing, affordable and market-rate rental housing, live/work studios, retail facilities, and offices surrounding a series of connected open spaces, and all are within walking distance

of a local shopping center or a short bus ride to downtown Denver. Milwaukee's Riverwalk development created walking paths that give downtown workers easy walking access to restaurants, apartments, stores, and offices; the development cost \$9.5 million, but created 15 times that amount in private development, according to the city's mayor.

- Cohousing developments that combine private homes and extensive community amenities such as meeting rooms and recreational facilities are becoming more common. Near downtown Atlanta, the East Lake Commons cohousing development was designed and arranged by consensus of the residents to promote and enhance a sense of place. East Lake Commons' residents enjoy 10 acres of green space and share the fruits of an organic garden. Automobiles are parked on the edge of the property, and residents take winding pathways through the neighborhoods; all paths and entryways are ramped for wheelchair and stroller access and are wide enough to permit easy use. One CDC staff member who lives there, Jim Lando, MD, MPH, says that the main reason he sought a cohousing development was to allow him to get to know his neighbors better. Because he knows that few of the other parents there allow their children to watch a lot of television, he can be confident that his children are not doing that at their friends' homes. He believes his children are more active because they can roam the

large common area. "It's all about interacting with the people around you," he said.

Public health professionals are becoming familiar with the notion that land-use decisions can have important effects on public health, and are looking for opportunities to influence such decisions. According to Richard J. Jackson, MD, MPH, Director, National Center for Environmental Health, "We must be alert to the health benefits, including less stress, lower blood pressure, and overall improved physical and mental health, that can result when people live and work in accessible, safe, well-designed, thoughtful structures and landscapes." CDC's health-related quality of life measures are helping bolster the new multidimensional public health paradigm that includes all aspects of health—physical and mental, community and environmental—and diverse partnerships for improving the quality of life in all our communities.

For Further Reading

Development and Public Health: Could Our Development Patterns Be Affecting Our Personal Health?

Available at


www.lgc.org/freepub/land_use/articles/develop_and_publichealth.html.

Focus on Livable Communities: Why People Don't Walk and What City Planners Can Do About It. This fact sheet was developed by the Local Government Commission through a contract with the University of California, San Francisco, as part of a project funded by the Physical Activity and Health Initiative,

California Department of Health Services, under a Preventive Health Services Block Grant from CDC. It is available at www.lgc.org/freepub/land_use/factsheets/plan_to_walk.html.

Creating a Healthy Environment: The Impact of the Built Environment on Public Health, by Richard J. Jackson,

MD, MPH, and Chris Kochtitzky, MSP. *Sprawl Watch Clearinghouse Monograph Series*, 2001. Available at www.sprawlwatch.org/.

ACES (Active Community Environments Initiative). For additional information, visit www.cdc.gov/nccdphp/dnpa/aces.htm.

Bridging the Artificial Gap Between Physical and Mental Illness

Physical and mental health are very much intertwined, especially in the case of depression. Physical conditions often result in mental health complications; likewise, depression can manifest itself through physical symptoms. People with depression may adopt unhealthy coping behaviors, such as smoking or overeating, that further contribute to poor physical health. Depression commonly disturbs sleep, appetite, job performance, and the ability to enjoy things previously found pleasurable.

“Research has revealed that people with depression are high utilizers of medical care,” said CDC’s Daniel P. Chapman, PhD, MSc, a psychiatric epidemiologist. “They often have physical complaints such as fatigue or sleep and appetite disturbances, which may really be manifestations of depression. So early detection and treatment of depression not only prevent needless suffering but are also cost-saving.”

A 1999 report prepared by the office of the U.S. Surgeon General estimated that at least one in five Americans experiences mental illness, including

depression, in any given year.

“The message I am working hard to get out to all Americans is that we must be as vigilant about our mental and emotional health as we are about our physical health and safety,” said U.S. Surgeon General Richard Carmona in a recent speech to the Mental Health Association of Rhode Island and the Allied Advocacy Group for Collaborative Care.

Scientists from the Global Burden of Disease and Injury project, a collaborative effort of the Harvard School of Public Health, the World Health Organization, and the World Bank, recently analyzed current health trends in each country and made projections of what the major health problems are likely to be in 2020. According to this project, the number one worldwide health threat by that year will be heart disease, followed closely by depression and other psychiatric illnesses.

Untreated depression is universally believed to be the leading cause of suicide. Research has demonstrated that depression also is a leading cause of disability—major depression currently

is the fourth leading cause of disability in the world and is expected to become the second leading cause by 2020.

Managing depression can be costly. A 1993 study by Greenberg et al. estimated that \$43.7 billion is expended annually for depression-related health care costs in the United States alone. Recent trends suggest that although most people suffering from depression do not receive treatment, those who do are far more likely to receive expensive psychotropic medication and slightly less likely to receive psychotherapy than they were in 1987.

It is generally held that a combination of psychotherapy (most notably, cognitive behavioral therapy and interpersonal therapy) and medication is the most effective treatment for major depression. Newer antidepressant medications are safe and effective, have fewer side effects than previous ones, and are better tolerated over longer periods of time. Exercise and special diets may also be helpful.

Depression Is an Ongoing Area of Research

Research has shown that adverse childhood experiences such as abuse and household dysfunction not only cause unhealthy coping behaviors in young people (for example, smoking, heavy alcohol use, overeating, promiscuity, drug use) but also may lead to the development decades later of injuries and the chronic diseases that are the most common causes of death and disability in this country, including heart disease, cancer, and chronic lung and liver disease. CDC investigations have shown that adverse emotional experiences during childhood

also play an important role in the development of depression during adulthood. These findings have important implications for the exploration and creation of preventive interventions. Because depression and anxiety frequently coexist, NCCDPHP is now collaborating with the American Psychiatric Association's Psychiatric Research Network in examining the unique role of anxiety in the course and treatment of depression.

In other research, "work we've done at NCCDPHP has documented major medical comorbidities associated with hospitalization for depression—primarily circulatory, metabolic, and endocrine disorders," Dr. Chapman explained. Another NCCDPHP study involving persons whose disability was not attributable to a psychiatric disorder revealed a linear relationship between the degree of disability and the prevalence of depressive disorders: the greater the degree of activity limitation, the higher the likelihood the person was depressed.

Measuring Healthy Days

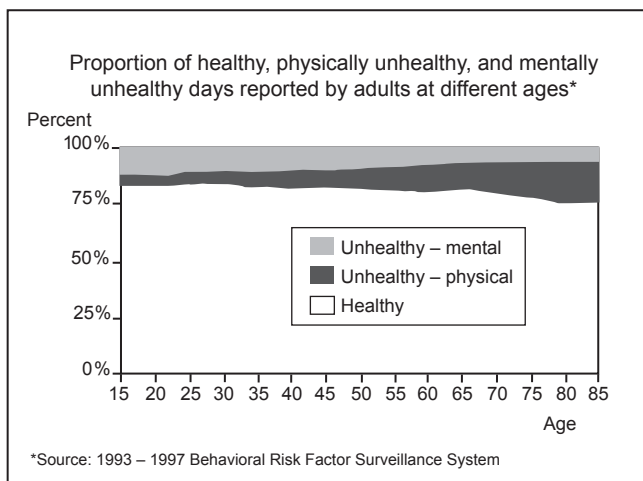
In public health and in medicine, the concept of health-related quality of life (HRQOL) refers to a person's or group's perceived physical and mental health over time. For a long time, physicians have informally assessed the HRQOL effects of illness in their patients by simply asking how they have been feeling lately. More recently, as valid measures are developed, HRQOL often has been assessed in clinical research and, increasingly, in patient care as well to help physicians better understand how illness interferes with people's day-to-day life.

“Mental health is an essential element of health-related quality of life—perhaps the most important element,” said CDC’s David Moriarty, BS, a program analyst who coordinates CDC’s HRQOL assessment program.

At the population level, health-related quality of life surveillance may help public health professionals

understand how and why depression is linked with chronic disease. According to a May 1998 CDC report, “Perceived mental distress is a key component of HRQOL and is believed to be

an important determinant of health behaviors related to chronic disease and disability prevention.” It may be easier to address mental distress than to attempt to change unhealthy behaviors. For example, treatment of anxiety and depression among adults who smoke or are overweight may enable them to make and maintain healthy behavioral changes and reduce their risk of disease and death.



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Four HRQOL measures asking about general self-rated health and recent days of physical health, mental health, and activity limitation have been part of CDC’s core Behavioral Risk Factor Surveillance System (BRFSS) since 1993 and were added, beginning in 2000, to the examination

- Permits the calculation of a Healthy Days summary measure that gives equal weight to mental and physical health perceptions.
- Shows overall disparities and trends for population mental distress.
- Shows the large perceived health and activity limitation burden of mental disorders.
- Shows associations between mental distress and behavioral risks.
- Permits analysis of community indicators of mental distress.
- Provides a valid and feasible standard for comparing mental distress in community versus research settings.

CDC’s Morbidity and Mortality Weekly Report (MMWR) has reported findings from BRFSS surveys from 1993 through 1997. Although “healthy days declined only modestly with increasing age, ...young adults reported consistently worse mental health versus the oldest age groups, whereas older adults reported considerably more physical health problems than younger adults.”

According to this report, population assessment can be an integral aspect of HRQOL surveillance when it addresses perceived mental distress in general along with symptoms of depression such as anxiety, sleeplessness, and lack of vitality. In the 1995–1997 surveys, the highest levels of recent sleeplessness, the lowest levels of vitality, and the highest levels of recent activity limitation were reported among adults who said that their current activity limitation was primarily caused by depression, anxiety, or some other emotional problem.

More recently, HRQOL tracking through the BRFSS has revealed a nationwide increase in reported mentally unhealthy days following the September 11, 2001, terrorist attacks in New York City; Washington, D.C.; and Pennsylvania. In a recent MMWR article, CDC reported that three states (Connecticut, New Jersey, and New York) added a terrorism module to their ongoing BRFSS surveys and found suggestions of widespread psychological and emotional effects in all segments of their populations. For example, three-fourths of respondents reported having problems attributed to the attacks, and almost half reported that they experienced anger. Approximately 3% of alcohol drinkers reported consuming more alcohol, 21% of smokers reported an increase in smoking, and 1% of nonsmokers reported that they started to smoke after the attacks. Members of CDC's Mental Health Work Group and others are studying these findings to better understand the population effects of catastrophic events.

Examples of Putting Healthy Days Measures to Work at the State Level

In Oregon, findings from the 2000 BRFSS are helping state officials plan programs to improve the health of some population groups. According to an Oregon Health Division newsletter article, "These findings corroborate what we already know about physical health risks . . . They also shine light on the association between mental health and . . . key behaviors [related to smoking, overweight, and physical inactivity]. In particular, these data suggest that getting Oregonians of all ages to participate in even moderate physical activity might substantially improve both physical and mental health status."

Researchers in Michigan used BRFSS findings related to days of poor physical and mental health to examine racial/ethnic disparities. They found that African Americans had more days of poor mental health in the past 30 days (4.3) than whites (3.4), a statistically significant difference. Black men also had poorer physical health and premature mortality from heart disease, cancer, diabetes, and homicide. Said the University of Michigan's Corinne Miller, DDS, PhD, "How we can best interweave data on mental and physical health needs to be determined."

The CDC Mental Health Work Group

To further explore the link between mental and physical health, CDC created the Mental Health Work Group in 2000. This group includes more than

85 members representing multiple disciplines, divisions, and centers within CDC and its sister agency, the Agency for Toxic Substances and Disease Registry (ATSDR). Its overall goal is to foster collaboration and advancement in the field of mental health in support of CDC's commitment to promote health, prevent disease and injury, and improve quality of life.

"We can't do good public health without addressing mental health," said the work group's chairman, Marc

"We can't do good public health without addressing mental health."

Safran, MD, FACPM, PFAPA, a board-certified psychiatrist and medical epidemiologist in CDC's National Center for HIV, STD, and TB Prevention. Because CDC is not a mental health agency, CDC and ATSDR staff members participating in this work group do so voluntarily out of their firm commitment to advancing the field of public health within the context of CDC's overall mission.

"The willingness of members to contribute to the Mental Health Work Group in addition to their daily responsibilities has made the group a success," said Dr. Safran.

Members of the work group were instrumental in fostering CDC's sponsorship of a major international mental health conference in December 2000. *The Inaugural World Conference: The Promotion of Mental Health and Prevention of Mental and Behavioral Disorders* featured a number of presentations by CDC researchers on health-related quality of life and global strategies for mental

health promotion. At this meeting, CDC recommended that international public and mental health groups

- Analyze existing Healthy Days population data.
- Adapt Healthy Days measures for their countries.
- Validate the measures for their populations.
- Include these measures in other surveys and studies.

The work group's Web site (www.cdc.gov/mentalhealth), which is regularly updated by work group members and voluntarily maintained by members of NCCDPHP's information resource management team, offers information about the group itself as well as about related mental health publications and resources. For those who need mental health information that is beyond the scope of CDC's mission, the Web site also provides links to a number of mental health organizations in each state that can provide clinical referrals or answers to individual treatment questions.

The work group's activities clearly support CDC's belief that health is more than just the absence of disease. As people live longer lives, CDC and its partners will continue working to monitor and improve the physical and mental health-related quality of those extra years of life.

Suggested Reading

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“Researchers Examine Depression Trends,” by Matt Mientka, U.S. Medicine Information Central, May 2002. Available at www.usmedicine.com/article.cfm?articleID=400&issueID=38.

The Spread of Depression: Public Health Trends, by Barry R. Bloom, *International Herald Tribune*, December 3, 1999. Available at www.ihf.com/IHT/SR/120399/sr120399h.html.

Self-Reported Frequent Mental Distress Among Adults—United States, 1993–1996. *MMWR*, Vol. 47, No. 16, May 1998.

Measuring Healthy Days—Population Assessment of Health-Related Quality of Life. CDC; November 2000.

Psychological and Emotional Effects of the September 11 Attacks on the World Trade Center—Connecticut, New Jersey, and New York, 2001. *MMWR*. Vol. 51, No. 35, September 2002.

Happy and Health-Wise: Measuring Health-Related Quality of Life. Center for Disease Prevention & Epidemiology, Oregon Health Division. *CD Summary* Vol. 50, No. 17, August 14, 2001. ☀

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Conferences

[CDC's 2003 Cancer Conference](#)

Held biennially since 1999, CDC's cancer conference will take place September 15–18, 2003, at the Marriott Marquis Hotel in Atlanta, Georgia. This year's theme is “Comprehensive Approaches to Cancer Control: The Public Health Role.” The conference will focus on the public health role for each of the major comprehensive cancer control elements: cancer prevention, early detection, treatment, rehabilitation, and palliation. Cosponsors of the event are the American Cancer Society, the Centers for Disease Control and Prevention, the Chronic Disease Directors, the Health Resources and Services Administration, the National Cancer Institute, and the North American Association of Cancer Registries. For more information about the conference, please visit www.cancerconference.net.

[Addressing Social Determinants of Disparities in Health](#)

This CDC forum will take place October 28–29, 2003, in Atlanta, Georgia. Topics include social determinants of health; how to develop, implement, and evaluate interventions; organizational change; and policy issues to reduce health inequalities. For more information, contact Ms. Marilyn Metzler at MMetzler@cdc.gov or Ms. Margaret Kaniewski at MKaniewski@cdc.gov or visit www.cdc.gov/sdoh/.

Conferences - *continued*

Call-to-Action Conference

A Call-to-Action conference will be held October 21, 2003, in Washington, D.C., for A National Agenda for Action: The National Public Health Initiative on Diabetes and Women's Health. Information is available via e-mail at diabetes@cdc.gov or the Web at <http://www.cdc.gov/diabetes/projects/women.htm>.

The 18th National Conference on Chronic Disease Prevention and Control

CDC's National Center for Chronic Disease Prevention and Health Promotion will host its 18th National Conference on Chronic Disease Prevention and Control February 18–20, 2004, at the Marriott Wardman Park Hotel in Washington, D.C. This year's theme is "Investing in Health: The Dollars and Sense of Prevention." The annual conference is also sponsored by the Chronic Disease Directors and CDC's Prevention Research Centers program. Sessions will address health communications, policy, partnerships, and advocacy. For more information, visit www.cdc.gov/nccdphp/conference or www.ChronicDisease.org.

The 18th World Conference on Health Promotion & Health Education

The 18th World Conference on Health Promotion & Health Education will be held April 26–30, 2004, in Melbourne, Australia. The conference title, "Valuing Diversity, Reshaping Power: Exploring Pathways for Health and Well-Being," highlights the need for broadly based partnership in health development if global changes are to be addressed through health promotion. This conference is the only regular forum for a truly global exchange of views and information on health promotion and education. For more information, visit www.Health2004.com.au or contact the meeting planners via e-mail at Health2004@meetingplanners.com.au.

Diabetes Conference

CDC's Division of Diabetes Translation will hold its annual conference May 11–14, 2004, at the Fairmont Chicago in Chicago, Illinois. This conference will explore science, policy, education, and program planning and implementation and evaluation issues as part of the effort to eliminate the burden of diabetes. Please visit the conference Web site for diabetes information, updates, and to respond to the call for abstracts: www.cdc.gov/diabetes/conferences.

Communications

Preventing Chronic Disease

Preventing Chronic Disease (PCD) is a peer-reviewed electronic journal established to provide a forum for public health researchers and practitioners to share study results and practical experience. The journal is published by the

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National Center for Chronic Disease Prevention and Health Promotion, one of eight centers within CDC.

The mission of the journal is to address the interface between applied prevention research and public health practice in chronic disease. PCD focuses on chronic disease prevention, such as preventing cancer, heart disease, diabetes, and stroke, which are among the leading causes of death and disability in the United States.

The inaugural issue of PCD will be available online January 2004.

For more information or to submit a manuscript, please visit the journal's Web site, www.cdc.gov/pcd/.

[A Public Health Action Plan to Prevent Heart Disease and Stroke](#)

Health and Human Services Secretary Tommy G. Thompson introduced *A Public Health Action Plan to Prevent Heart Disease and Stroke* at the Steps to a HealthierUS: Putting Prevention First Conference held in Baltimore in April 2003. The *Action Plan* is a public health strategy that provides a blueprint to address both treatment and prevention of heart disease and stroke. It describes the need for urgent action to prevent heart disease and stroke and a framework for developing a health care system that supports both prevention and treatment. Representatives from several organizations, including the American Heart Association, the American Stroke Association, the Association of State and Territorial Health Officials, and private-sector partners, will work with CDC to provide national leadership to implement the plan and reverse the epidemic of heart disease and stroke. For more information or free copies of the *Action Plan*, call 888/232-2306 (toll free inside the United States), e-mail ccdinfo@cdc.gov, or visit the Web site: www.cdc.gov/cvh.

[The National Public Health Initiative on Diabetes and Women's Health](#)

On March 25, 2003, Health and Human Services Secretary Tommy G. Thompson introduced a national plan to address the growing epidemic of diabetes in women. The National Agenda for Public Health Action: The National Public Health Initiative on Diabetes and Women's Health is designed to mobilize the nation to address diabetes as a growing health concern. National organizations who are working to implement the initiative include the cosponsoring organizations: CDC, the American Diabetes Association, and the Association of State and Territorial Health Officials. For more information, visit www.cdc.gov/diabetes/projects/women.htm.

[National Call to Action Seeks to Improve America's Oral Health](#)

The National Call to Action to Promote Oral Health, the latest in an ongoing effort to address the country's oral health needs in the new century, was released in April at the 2003 National Oral Health Conference. Building on efforts begun with publication of *Oral Health in America: A Report of the Surgeon General*

Communications - continued

(May 2000) as well as *Healthy People 2010*, the Call to Action identifies action areas for communities working to prevent oral diseases and improve oral health. View the Call to Action at www.nidcr.nih.gov/sgr/CallToAction.asp. Request a copy of the report from the CDC Division of Oral Health at 770/488-6054 or by sending an e-mail to oralhealth@cdc.gov.

Oral Health, U.S. 2002

Oral Health, U.S. 2002 is a new resource that summarizes the oral health status of the United States population. Intended as a useful tool for researchers, clinicians, and policy makers, this databook provides comprehensive information drawn from national surveys to describe the current status of oral and craniofacial health. The report can be viewed on the Web site of the National Institute of Dental and Craniofacial Research (NIDCR)/CDC Dental, Oral, and Craniofacial Data Resource Center (DRC) at <http://drc.nidcr.nih.gov/report.htm>. It also is available as a CD-ROM or hard copy and can be ordered by contacting the DRC at 301/294-5594 or by sending an e-mail to oralhealthdrc@northropgrumman.com.

Atlas of Stroke Mortality: Racial, Ethnic, and Geographic Disparities in the United States

In February 2003, CDC released the *Atlas of Stroke Mortality: Racial, Ethnic, and Geographic Disparities in the United States*. This publication is the third in a series of CDC atlases related to cardiovascular disease, published in collaboration with West Virginia University and the University of South Florida. Together, these publications have informed policy makers and researchers about the serious disparities in heart disease and stroke mortality. An important finding in the *Stroke Atlas* is that geographic disparities in stroke mortality vary substantially among racial and ethnic groups. The maps allow health professionals and concerned citizens at the local, state, and national levels to identify populations at greatest risk for stroke and to tailor prevention policies and programs to communities most in need.

An interactive version of the *Stroke Atlas* is available at www.cdc.gov/cvh along with the two previously published atlases on heart disease. Users can click on any county in the United States and get information on heart disease and stroke and the sociodemographic profile of that county. Copies of the *Stroke Atlas* can be requested on the Web site, by e-mail at ccdinfo@cdc.gov, or by telephone at 888/232-2306.

Promising Practices in Chronic Disease Prevention and Control

In the recently released *Promising Practices in Chronic Disease Prevention and Control: A Public Health Framework for Action*, CDC shares its vision of how states and their partners can reduce the prevalence of chronic diseases and their risk factors by instituting comprehensive statewide programs. The recommendations are based on prevention effectiveness research; program evaluations; and

the expert opinions of national, state, and local leaders and public health practitioners, including CDC staff. The book provides numerous sources, including Web sites, that describe state and local examples of what can be achieved; state-of-the-art strategies, methods, and tools; and training opportunities. To order, please contact the Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Mail Stop K-40, 4770 Buford Highway NE, Atlanta, GA 30341-3717, telephone 770/488-5706, e-mail ccdinfo@cdc.gov, or visit www.cdc.gov/nccdphp.

The Power of Prevention

CDC's April 2003 publication *The Power of Prevention* describes the seriousness of chronic diseases and the need to prevent them to reduce related health care costs. This document outlines the public health approach to reducing the health and economic burden of chronic disease: prevention. Graphs and maps that show relevant health-related trends, including the aging of the U.S. population, the increasing number of obese Americans, and rising medical care costs, help illustrate the need to prevent chronic disease. The document also provides a national chronic disease prevention agenda. To order, please contact the Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Mail Stop K-40, 4770 Buford Highway NE, Atlanta, GA 30341-3717, telephone 770/488-5706, e-mail ccdinfo@cdc.gov, or visit www.cdc.gov/nccdphp.

State Programs in Action

CDC's 2003 publication, *State Programs in Action: Exemplary Work to Prevent Chronic Disease and Promote Health*, provides examples of state-based programs that are reducing the burden of chronic disease by reducing risk factors for chronic disease, screening for early detection of chronic disease, providing high-quality health education programs, or creating healthier communities. Selected programs—which range from small community-based projects to reform of state policies—show innovative approaches to research and practice. To order, please contact CDC, National Center for Chronic Disease Prevention and Health Promotion, Mail Stop K-40, 4770 Buford Highway NE, Atlanta, GA 30341-3717, telephone 770/488-5706, e-mail ccdinfo@cdc.gov, or visit www.cdc.gov/nccdphp.

Correction

In CDNR volume 15, no. 3 (Fall 2002), we incorrectly reported that smoking among high school students declined by 16%. The actual rate of decline is 18%. We apologize for the error.

Information Sources

Behavioral Risk Factor Surveillance System Data

CDC's National Center for Chronic Disease Prevention and Health Promotion has released the 2002 Behavioral Risk Factor Surveillance System (BRFSS) data. The BRFSS is a unique, state-based surveillance system active in all 50 states, the

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District of Columbia, Puerto Rico, the Virgin Islands, and Guam. The BRFSS provides flexible, timely, and ongoing data collection that allows for state-to-state and state-to-nation comparisons. State-specific data, including racial-and-ethnic-specific data from the BRFSS, provide a sound basis for developing and evaluating public health programs, including programs targeted to reduce racial and ethnic disparities in health risks. The BRFSS is the largest telephone-based surveillance system in the world: 247,977 interviews were conducted in 2002.

The 2002 BRFSS data are located at www.cdc.gov/brfss/ti-docs.htm. If you have questions, please call Dr. Lina Balluz, Behavioral Surveillance Branch, at 770/488-2466. ☀

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