
OBSERVER

SPECIAL ISSUE

APRIL 1996

REPORT 4

HUMAN CAPITAL INITIATIVE

Doing the Right Thing

A Research Plan for Healthy Living

This document is a plan for the strategic use of behavioral research to help us understand, prevent, and treat disease and to maintain robust health among all ages and across all segments of our population. We must use the knowledge we already have about health and behavior to help people be healthy now. By deepening our understanding of the interrelation of behavior, biology, and environment through a strong program of basic research, development, and applications, we can put behavioral science directly and efficiently in the service of improving the health of all our nation's citizens, now and in the future.



© Chuck Savage

DOING THE RIGHT THING

A RESEARCH PLAN FOR HEALTHY LIVING

Contents

The Human Capital Initiative Background	3
Executive Summary	4
Introduction	6
CHALLENGE 1: Understanding Chronic Illness, Our Most Serious Health Threat	8
CHALLENGE 2: Promoting Health and Preventing Disease	14
CHALLENGE 3: Increasing Knowledge of Health Relevant Processes Among Understudied Groups	18
CHALLENGE 4: Reshaping the Health Care System to Meet Tomorrow's Needs	22
Recommended Readings	24
Human Capital Initiative Coordinating Committee	25
Committee on Doing the Right Thing	25
Participating Organizations	25
Sponsoring Organizations	26
Participants and Reviewers	26

Human Capital Initiative

Background

Origins of the Human Capital Initiative

For the past six years, the psychological science community has been developing a national behavioral science research agenda that illustrates the potential of behavioral science research in addressing critical areas of concern to this country. The first stage of the process began in January 1990, when more than 100 researchers representing 65 psychological organizations and half a dozen federal agencies gathered in Tucson, Arizona, for what was to be the first of several Behavioral Science Summit Meetings. The number of organizations represented in later meetings grew to near 80.

Convened under the sponsorship of the American Psychological Society with partial support from the National Institute of Mental Health (NIMH), the Summit participants began by addressing this basic question: Given the array of different scientific perspectives within behavioral science, from brain research, to the study of the whole person, to social and organizational research, was there enough of a common bond to warrant a joint, large-scale research effort? The unanimous answer was, "Yes!" and the Summit participants endorsed the development of a research agenda that would help policy makers in federal agencies set funding priorities for psychological and related sciences.

The result of the first stage was the *Human Capital Initiative* document, a framework for a sustained research effort published in 1992. It targets six problems – Aging, Literacy, Productivity, Substance Abuse, Health, and Violence – facing the nation, communities, and families and describes these issues in terms of the application of psychological research for their amelioration. Further details and copies of

the *Human Capital Initiative* are available from the American Psychological Society, 1010 Vermont Avenue, NW, Suite 1100, Washington, DC 20005-4907. (Phone: 202-783-2077; Fax: 202-783-2083; e-mail: APS@info.cren.net)

The Second Stage

As of 2 1/2 years ago, the Human Capital Initiative (HCI) entered its second phase. Using the 1992 HCI document as a guiding framework, groups of individual investigators – representing the 65+ scientific societies and federal agencies – have been brought together on a regular basis to develop specific research initiatives. The results have been published in the HCI report series. The present HCI document is Report 4 in that series, and it addresses the use of behavioral research to promote health and reduce the escalating costs of medical care. The previous three HCI reports focused on productivity in the changing workplace (October 1993), productive aging (December 1993), and reducing mental disorders (February 1996). (See the complete list of reports on page 2. Copies are available from APS at the above address.)

The six broad target areas of national concern identified in the original (1992) *Human Capital Initiative* are not meant to limit the specific research initiatives that might come forward. Rather, they are intended to serve as starting points to stimulate research that adds to both theoretical and practical knowledge of these and other crucial issues. The expectation is that each HCI report will culminate in shaping or generating federal and private research funding programs that address the specific national issues raised in each Human Capital Initiative report.

This document is published by the Human Capital Initiative Coordinating Committee on behalf of the sponsoring organizations. All sponsoring organizations have unlimited rights to disseminate the document. Further details and copies of the original Human Capital Initiative document are available from the American Psychological Society.

Doing the Right Thing: A Research Plan for Health Living is the result of a collaboration among representatives of 23 organizations (see page 26 for a list of these organizations). A drafting committee prepared a preliminary working document prior to a workshop held in Bethesda, Maryland, on June 17-18, 1994. Workshop participants provided feedback and additional initiatives. The final text was circulated for review and approval by all workshop participants and an additional group of representatives named by the sponsoring or participating organizations.

A HUMAN CAPITAL INITIATIVE REPORT

DOING THE RIGHT THING

A RESEARCH PLAN FOR HEALTHY LIVING

Executive Summary

In health, behavior counts. What we do – or do not do – can determine whether or not we will develop a serious illness. If we do become ill, our behavior can determine whether we live, die, or suffer from major disability. Each of us has in some measure the power to protect our good health, to prevent some of our own suffering, and to improve the outcome of diseases we cannot avoid. So why are health costs still soaring and diseases such as heart disease, cancer, and AIDS killing so many people every day?

Science Can Create the Knowledge Base for Health Action

This document is a plan for the strategic use of behavioral research to help us understand, prevent, and treat disease and to maintain robust health among all ages and across all segments of our population. We must use the knowledge we already have about health and behavior to help people be healthy now. By deepening our understanding of the interrelation of behavior, biology, and environment through a strong program of basic research, development, and applications, we can put behavioral science directly and efficiently in the service of improving the health of all our nation's citizens, now and in the future.

A Four-Part Plan to Build and Use The Scientific Knowledge Base

Top priorities in implementing this strategy lie in four domains of action:

- ◆ Today's most serious health threats are chronic diseases. We must study and understand the basic behavioral processes in the prevention, development, and treatment of chronic illness.
- ◆ To achieve better national health, we must accelerate the development of the scientific knowledge base for health promotion and disease prevention.
- ◆ We must extend the means to maintain good health to all groups in our society.
- ◆ We must reshape our health care system and bring more attention to bear on health promotion and disease prevention.

Chronic Illness, Our Most Costly Health Problem, Must Be Controlled

With the eradication of many disease that brought death in a short time, we are now concentrating on disease that have comparatively long time courses and complex causes. Seven of the 10 leading causes of death have aspects that can be modified by doing the right thing; that is, by making healthy choices about our own behavior. This modifiable risk offers the best opportunity to prevent and control chronic diseases. We know, for example, that stress, smoking, poor diet, obesity, and lack of exercise can contribute to heart disease and cancer, and that infection by the AIDS-causing HIV often occurs as a result of behavioral choices. Unfortunately, sometimes poor choices are made early in life before one's judgment is well formed – like starting to smoke or overeat in adolescence. This means that old patterns of behavior must be put to rest, and new patterns learned. We all know that this can be done – and also how difficult it can be. Research can help us discover ways to facilitate these changes. Understanding and modifying behavioral promoters of disease can greatly enhance health and reduce health care costs.

Gaps in the Scientific Knowledge Base for Health Promotion and Disease Prevention Must Be Filled

In many instances, we know which behaviors promote good health and which do not. What we must learn is how to get people to engage in healthy behaviors early in life and maintain them, as well as how to motivate them to avoid unhealthy or high-risk situations. We must learn how to do this even when healthy behavior seems less rewarding in the short run than more dangerous activities.

Behavior, biology, and the environment interact with each other to increase or diminish risk – but exactly how they do this is a major research priority. We do know how to make some effective behavioral interventions. But the number of people who behave in ways that put their health in jeopardy – and that means almost all of us at some point in our lives – is a clear indication that we need a more rigorous approach to intervention research and application of research knowledge.

To Improve Health Generally, Health Promotions and Disease Prevention Procedures Must Be Developed, and Access to Care Equalized

Age, race, gender, and socioeconomic factors in the distribution of diseases means that the best approach to understanding the behaviors that promote health and prevent disease is necessarily complex. So is the design of specialized interventions to foster healthy behaviors in various segments of our population, especially since access to health care is not equally distributed in our society. Worse yet, major threats to health are also not equally distributed across society. AIDS and HIV disease occur disproportionately in certain minority populations. Women are less likely than men to be diagnosed with heart disease in middle age, even though heart disease is a leading killer of older women. Breast, oral, and other cancers occur more often in some minority groups and are more virulent in others. But research has not traditionally focused on women, minorities, the poor, the elderly, and on rural Americans. They appear to have unique health problems, and, of course, they ultimately consume substantial health care resources when treatment is required.

The reemergence of tuberculosis, associated with AIDS and with poor and homeless populations, is an important example of what can happen when we don't know useful behavioral approaches to delivering a full treatment regimen to a specific and underserved population: new forms of tuberculosis (TB) are arising, and they are resistant to traditional treatment.

Basic behavioral research is critical for all of us.

Prevention, Early Detection, and Access Must Become Significant Parts of the Health Care System

Most of the current efforts in our health care system are directed at treating diseases, not at preventing them. We need a system that is as sophisticated in helping people avoid illness and maintain robust health as it is in curing diseases. Developing information systems and decision-making tools for practitioners and administrators, modifying traditional training models, and altering patterns of access to health care are essential for a health care system that will meet our current and future needs. A combination of systems research and application of the knowledge derived from that research can produce a comprehensive health care system that will safeguard the health of all citizens.

What Can We Do Now?

A solid research base is as important to producing a citizenry that behaves in healthy ways as it is to treating or curing diseases. But neither research nor intervention is enough by itself. To increase substantially the health of the nation's citizens, this strategic plan calls on us to create a synergistic interrelationship among basic behavioral research, application of behavioral science to interventions and disease management, and evolving health care systems. Our goal is nothing less than good health for all of us.



© David Hathcox

We need a system that is as sophisticated in helping people avoid illness and maintain robust health as it is in curing disease.

INTRODUCTION

Facing Today's Reality

Well into the 20th century, infectious illness was the major cause of disability and death. Improved sanitation, antibiotics, and vaccines changed that. Today, chronic illnesses, many of them preventable, are the major threats to life and health (Fig. 1). The costly advanced technologies developed to treat them have resulted in a dangerous increase in spending for health care.

In 1960, the United States spent 5 percent of its Gross National Product on health care; by 1990, this figure had reached 12%. The loss of productivity and quality of life associated with chronic illnesses makes these financial costs even more intolerable.

Preventing chronic diseases in the first place costs considerable less than treating them, and prevention is largely a matter of health behavior. For example, behavioral interventions can reduce clinic or office visits for minor ailments by almost one-third, total ambulatory care visits by one-fifth, and inpatient hospital stays substantially.

To improve health and management of chronic illness, we must extend our knowledge of behaviors that can cause illness or prevent it. With this knowledge, we can become

more successful in preventing diseases and stopping or slowing their progression when they do occur.

Meeting four crucial challenges is the key to achieving that success:

- ◆ We must target chronic illnesses and learn how they develop;
- ◆ We must enlarge as rapidly as we can the base of scientific knowledge in areas critical to health promotion and disease prevention;
- ◆ We must increase our understanding of how to achieve and maintain good health in such a way that everyone in our nation has access to it; and
- ◆ We must make disease prevention and health promotion coequal with treatment of illness in our health care system.

This initiative is a plan for addressing these four key contributors to improved health for all of us.

Figure 1

Leading causes of death, 1990

Heart Disease	720,058
Cancer	550,322
Cerebrovascular Disease	144,088
Unintentional Injuries	92,983
Chronic Lung Disease	86,679
Pneumonia and Influenza	79,513
Diabetes	47,664
Suicide	30,906
Chronic Liver Disease/Cirrhosis	25,815
HIV Infection	25,188

Adapted from: McGinnis, M. (1994). The Role of Behavioral Research in National Health Policy. In S. Blumenthal, K. Matthews, and S. Weiss (Eds.), *New Research Frontiers in Behavioral Medicine: Proceedings of the National Conference* (p. 219). Washington, DC: NIH Publications.



© David Hathcox

In 1960, the United States spent 5 percent of its Gross National Product on health care; by 1990, this figure had reached 12 percent. The loss of productivity and quality of life associated with chronic illness makes these financial costs even more intolerable.

CHALLENGE 1

Understanding Chronic Illness, Our Most Serious Health Threat

Prolonged or chronic illnesses are the most costly and serious threats to health. Cancer, HIV disease, heart disease, and diabetes, which take more than 1.3 million lives annually, are examples of these chronic illnesses. Direct medical costs for lung cancer and heart disease alone exceed \$100 billion a year. But these and many other chronic illnesses are often preventable, and their progression and outcome can frequently be altered. One's own behavior helps determine susceptibility to these diseases, and our behavioral choices after contracting a chronic illness can determine whether the illness will be devastating or whether quality of life can be preserved or extended.

Research has shown how behavior directly affects disease processes; the challenge is to use these findings to devise strategies for preventing and controlling chronic illnesses. But the scientific basis for such intervention is incomplete; we know behavior is crucially important, but our knowledge lacks detail. We know, for example, that we can reduce the incidence of most chronic illnesses, and reduce the pain and progression of some diseases, by modification of unhealthy lifestyles, by management or reduction of stress, and by elimination of behaviors such as smoking, overeating, risky sex, and drug abuse. To achieve widespread prevention and successful control of chronic illnesses, however, requires more precise knowledge than we now have about how, when, and why some behaviors contribute to development of chronic disease while others protect against them. The challenge ultimately is no less than to understand how behavior, environment, and biology act on each other to produce illness or to support health.

This means that we need a better understanding of how bio-behavioral factors interact with genetic predispositions and environmental influences in causing or promoting illness. Just as important, we need better ways to prevent or modify behaviors that damage health and to bring into common practice behaviors that

protect us from chronic illness. Each of us needs only consult personal experience to recognize that *knowing* the right thing does not always translate into *doing* the right thing. In addition to understanding healthy and unhealthy behaviors, we need to understand the motivation to engage in or to avoid such behaviors. A productive attack on preventing and controlling chronic illness must include at least the following four areas of investigation:

- ◆ We must better understand the interrelation of behavior, biology, and environment in the development and course of chronic diseases as well as their treatment.
- ◆ Early detection and screening procedures offer some of the best weapons against chronic illnesses, and research should identify ways to detect disease early, when they are most easily treatable.
- ◆ Better knowledge of how to support those behaviors that give the chronically ill their best chance of leading high-quality, productive lives is essential.
- ◆ We must more effectively utilize and assist nonmedical caregivers and integrate them into the system of treatment for the chronically ill.



© David M. Doody

Research shows that successful smoking cessation is best predicted jointly by both the amount of tobacco consumed and the behavioral aspects of one's cigarette use — not by considering only one or the other.

PROBLEM 1: How Do Behavior, Biology, and Environment Interact to Produce or Prevent Chronic Disease?

What We Know

Health and illness are not matters of genetics alone. In fact, many diseases are largely nonheritable and appear to be caused by other factors. Even in cases where diseases have genetic components, not everyone predisposed by genetic makeup actually develops the disease. Some diseases are caused by viruses and other microorganisms. But not everyone who is exposed becomes ill – stress, depression, grief, altered sleep, and a number of other factors can make us more or less susceptible to disease and can influence how quickly we recover.

Even those with “good” genes and well-functioning immune defenses can develop a chronic disease if they make the wrong behavioral choices or they find themselves in unhealthy social or physical environments. For example, research indicates that heart disease and some cancers have genetic causes, but up to 90 percent of breast cancer and substantial variance in other diseases are thought to be caused by modifiable or nonheritable factors such as reproductive history, stress, smoking, or poor diet.

Interactions among environmental, behavioral, and biological factors in causing or modifying chronic illness are very complex, but it is crucial to understand them if we are to develop an arsenal of effective weapons to prevent and manage chronic illness. One does not simply choose to overeat, leading to obesity, diabetes, or heart disease; one’s eating behavior is controlled by many factors, and initial eating behaviors can trigger release of peptides that in turn affect

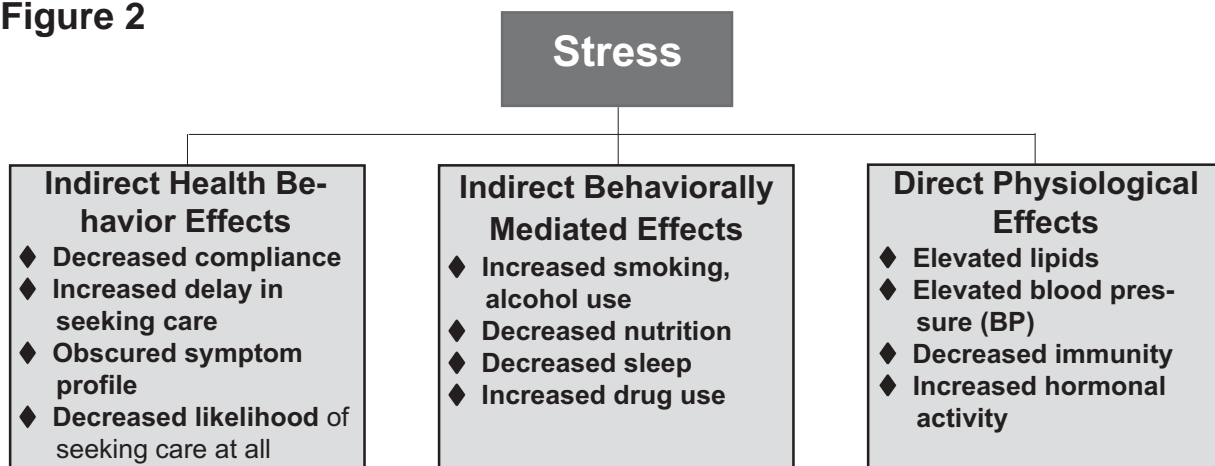
appetite and weight control. In determining who will respond to smoking cessation treatment, it is not enough to consider how much or how long the patient has smoked. Research shows that successful smoking cessation is best predicted jointly by both the amount of tobacco consumed *and* the behavioral aspects of one’s cigarette use – not by considering only one or the other. The role of stress in exacerbating or minimizing effects of toxic exposure or in altering immune, endocrine, and cardiovascular function, or in altering behaviors such as eating, smoking, and risk-taking is known to be important but remains largely unexplored. To state the complex simply, the environment and our behavior help to determine our susceptibility to disease and whether disease processes are initiated and sustained.

What We Need to Know

If we are to develop a deep and practical understanding of who is most at risk for chronic illness, of how to motivate those people to take appropriate preventive measures and to take advantage of early detection procedures, and of what interventions will be most successful with which individuals, we must first know more about the subtle and complex ways that biology, behavior, and environment jointly determine the likelihood that any one of us will develop a chronic illness or be successfully treated for it. Research must be targeted specifically at understanding these complex effects.

A single example is sufficient to illustrate this general “need to know”: Stress can be either good or bad for health, but which it will be at any given time is complex and hard to determine. Scientists have shown that moderate stress can improve performance, that stress is sometimes necessary for appropriate activity, and that overcoming stress can enhance one’s sense of personal efficacy. Some stress may even help equip individuals to minimize the negative outcome of future stress.

Figure 2



Adapted from: Baum, A. (1994). Behavioral, Biological, and Environmental Interactions in Disease Processes. In S. Blumenthal, K. Matthews, and S. Weiss (Eds.), *New Research Frontiers in Behavioral Medicine: Proceedings of the National Conference* (p. 62). Washington, DC: NIH Publications.

But other research has shown that intense or prolonged stressful events are associated with reductions in the strength of immunological activities in the body and with cardiovascular changes that can contribute to narrowing of blood vessels and to heart attacks or strokes (Fig. 2). Stress is necessary for survival but it can also dramatically alter susceptibility to disease. To minimize the bad effects of stress on health and maximize positive effects, we need a much better understanding of how environment, personal behavior, and biological state interact to produce and maintain stress, and enhance – or jeopardize – good health.

PROBLEM 2:

How Can Prevention and Use of Early Detection and Screening Procedures Be Improved So That Chronic Disease Can Be Identified When It Is Most Treatable?

What We Know

Chronic diseases are often progressive diseases in which effects worsen over time until death occurs. Since, even if we are successful in mounting effective preventive efforts, some disease will still occur, the next best defense is early detection. For example, the negative effects of high blood pressure, breast cancer, or age-related diabetes, if discovered and treated early enough, may be controlled sufficiently to preserve a life that is essentially normal in both length and quality. While not always the case, early detection is often an important defense against the ravages of disease.

In spite of this, we know that use of early detection procedures by Americans is far below what it ought to be. We know, for example, that many who are at high risk for HIV infection avoid screening procedures both because they do not *want* to know that they have contracted a fatal illness, and also because being HIV positive may affect employment and health benefits. Delays in seeking attention for frightening symptoms of cancer or heart disease are a major barrier to effective treatment. However, research gives some cause for optimism by revealing ways to increase reliably the use of early detection programs, such as seeking blood tests, regular mammography, or blood pressure checks. Research has also identified several useful approaches to changing some unhealthy behaviors that are particularly resistant to change because they are pleasurable or addicting. If we are to treat chronic disease effectively, it should be discovered early in its course; the research challenge is to understand how to make appropriate screening a general and normal part of the health maintenance regimen for all the nation's citizens.

What We Need to Know

We must develop and apply a full array of early detection interventions suited to a particular disease, to



© David Hathcox

We must develop and apply a full array of early detection interventions suited to particular diseases, to particular cultural or social considerations, and to a variety of screening environments.

particular cultural or social considerations, and to a variety of screening environments. Research should be focused in two broad areas: motivating individuals to take positive action to monitor and maintain their health, and motivating individuals to make appropriate use of opportunities for early detection of chronic illnesses. Researchers have identified and successfully altered some of these sources of motivation, but we are far from a systematic understanding of how key variables interact in specific situations. Our successes demonstrate that success is possible. Our failures remind us of the complexity of the task and help us direct attention to particular problems. Only by understanding these dynamic processes can we hope to achieve lasting adoption of healthy lifestyles among all segments of the population.

The logic of early detection efforts and screening for disease is compelling. Intellectually, each of us knows we should regularly check those things that family background

or statistics suggest are potential threats to our health. Actual practice is different. People put off screening. When a problem is detected, they sometimes delay treatment. This can result in health complications and unnecessary health care costs.

One goal of health and behavior research is to find the best ways to counteract these human tendencies to avoid early detection and treatment of chronic illnesses. There is no one way to do this. For example, what should be done to assure that sexually active teenagers will take proper precautions against sexually transmitted diseases and HIV infections is much different from what should be done to see that middle-aged men and women seek regular screening for prostate or breast cancer. New genetic tests for disease risk will have a variety of effects on surveillance behavior, stress, and quality of life. Their potential for affecting health and well-being is so great that they must be studied. When



© Frank Siteman

Physicians do not deliver the bulk of care for those who develop today's major illnesses. The extended time course of these illnesses requires long-term care, and that responsibility is likely to fall on family, friends, and professional and nonprofessional caregivers.

we understand these issues, strategies to motivate appropriate use of each early detection opportunity can then be devised, and alternate approaches can be tested to improve the effectiveness of interventions.

PROBLEM 3:

How Can We Improve Responses to Treatment and Quality of Life Among the Chronically Ill?

What We Know

Once chronic illnesses have developed and been detected, treatment outcomes depend on a range of behavioral and psychosocial factors, as well as on the treatment itself. Following recommendations provided by health care providers is critical to effective treatment. The success of treatment also appears to be related to the quality of doctor-patient communication. Behavioral treatment interventions to reduce pain, other symptoms of disease, and psychological disorders that may interfere with treatment or recovery are essential additions to traditional medical treatment. Behavioral strategies to manage symptoms and other approaches that enhance life quality, social and emotional support, and informed decision-making also facilitate treatment of and recovery from chronic illnesses. Persuading people to adhere to the demands of medical treatment, motivating them to maintain treatment regimens, assuring that they remember and understand details of their treatment, and reducing distress and emotional barriers to effective treatment significantly enhance the outcome of medical intervention and treatment of chronic illness.

We know about many cognitive and behavioral barriers to adherence to medical treatment regimens, and we also know that emotional and psychological problems, such as depression and anxiety disorders, can interfere with treatment. Pain is a major factor in adjustment to illness and consequent disorders can significantly affect medical treatment. For example, after heart attacks, patients who are depressed are at greater risk of subsequent disease and death than are patients who are not depressed.

What We Need to Know

It is possible to improve adherence to treatment regimens, but people and environments change over time. If we conduct long-term studies of treatment adherence, we can learn how to adjust behavioral interventions to assure continued compliance with medical recommendations.

We are also learning that for a number of chronic diseases, a combination of behavioral and medical interventions achieves best control of the disease. We should extend our understanding of the efficacy of such "blended" treatments to a greater range of disorders and expand the repertoire of effective behavioral interventions. If we can

intervene early in disease, reduce distress, and otherwise enhance coping and quality of life, we may be able to avoid medical complications, mental health problems, and the need for more costly interventions later.

The cognitive, behavioral, and social effects of many of our traditional medical treatments affect mental and emotional state, quality of life for the patient, adherence, and even treatment outcome. Medical treatment techniques must be examined and improved in light of new knowledge about their psychological effects.

For all chronic disease management strategies, research will enable us to better understand the psychosocial influences on treatment outcome, including symptom management techniques, decision-making procedures, and assessment practices in medical settings. There is increasing evidence that psychological disorders that occur at the same time as physical disorders, such as clinical depression, can have profound effects on treatment success and the course of the physical disease. This simultaneous occurrence of disorders is called comorbidity. Because the effects of comorbidity are so pronounced, we need a much more precise understanding of how and why this phenomenon occurs, and we need to find ways to prevent the negative outcomes associated with it.

PROBLEM 4:

How Will Family and Other Nonmedical Caregivers Change Chronic Care?

What We Know

Physicians do not deliver the bulk of care for those who develop today's major illnesses. The extended time course of these illnesses requires long-term care, and that responsibility is likely to fall on family, friends, and professional and nonprofessional caregivers.

A major illness such as cancer, heart disease, or AIDS can place tremendous stress on the families and friends of the patient. That stress is compounded when family members must, often with little preparation, also become health care providers. Yet, until now, the role of these crucial

health care providers has been regarded as largely peripheral to what we think of as the health care system.

The eventual loss of the family member for whom care has been provided also has its own lasting impact on family members, sometimes with negative implications for their own health.

Research on the effects of family caregiving is fairly new, but it has suggested that the stress of caregiving, often followed by bereavement, can have lasting effects on mood, mental health, the endocrine and immune systems of the caregiver, and even life expectancy. Moreover, there is little uniformity in the quality of care provided by such caregivers. Both the family context in which chronic illness occurs and the specific effects of caregiving are important dimensions in health care.

What We Need to Know

Only recently has research taken the first disciplined look at long-term health care delivered by nonprofessional and family caregivers. The research suggests that we need deeper knowledge of at least four aspects of this complex situation to improve the effectiveness of long-term care with respect to both the patients and the caregivers themselves. The first requirement is to help families and other nontraditional health care providers provide high-quality health care. Understanding the consequences of mental, physical, and social stresses placed on these providers by their caregiving responsibilities is the next requirement. We must help the caregivers maintain their own social, physical, and emotional health during caregiving and following the loss of the person for whom they have cared. Finally, we must understand the reciprocal effects of patient on family and family on patient to shape and support this important health care resource. By deepening our knowledge in these areas, we can lay the foundation for development of interventions that will facilitate better care of the chronically ill, better coping by family members caring for a family member, and better adjustment of family members to the loss of a loved one for whom family members have provided health care.



© Uniphoto

According to the U.S. Public Health Service, of the 10 leading causes of death in the United States, at least seven could be reduced substantially if people at risk would change just five behaviors: Adherence to medical recommendations (e.g., use of antihypertensive medication), diet, smoking, lack of exercise, and alcohol and drug use.

CHALLENGE 2

Promoting Health and Preventing Disease

According to the U.S. Public Health Service, of the 10 leading causes of death in the United States, at least seven could be reduced substantially if people at risk would change just five behaviors: Adherence to medical recommendations (e.g., use of antihypertensive medication), diet, smoking, lack of exercise, and alcohol and drug use (Fig. 3). The important role of these and other behaviors in major disease is clear. For example, approximately 65 percent of some forms of cancer are thought to be caused by smoking, diet, and exposure to sun. Workplace carcinogens, chemical interactions among compounds like tobacco and asbestos or alcohol, and viruses such as Hepatitis B are thought to account for even more cases. Recent epidemiological studies have further established that factors such as social isolation are also major risk factors for morbidity (disease) and mortality (death) from widely varying causes even after statistically controlling for known biological risk factors, social status, and baseline measures of health. In order to establish effective health promotion and disease prevention, much more basic research on risk factors and underlying mechanisms is needed. We must also use applied behavioral research to assess the effectiveness of various interventions and to put into practice what is known about promoting health and preventing disease.

We can make rapid advances in health promotion and disease prevention if we recognize the following:

- ◆ To increase the effectiveness of prevention, we must identify health-enhancing and health-impairing

behaviors as well as the bases of lasting behavior change.

- ◆ Understanding of the antecedents and dynamics of interactions between people and their health care providers will better enable us to frame our prevention and health promotion efforts.
- ◆ If we are to apply prevention efforts broadly, we must determine how socioeconomic differences affect health and susceptibility to disease.

PROBLEM 1:

We Must Identify and Understand Health-Enhancing and Health-Impairing Behaviors and Improve Disease Prevention

What We Know

Longitudinal studies have made it clear that a variety of risk and protective factors affect health across the life span. The behavioral sciences have contributed to the early identification of at-risk individuals and to programs to prevent or reduce risk. Prevention efforts that capitalize on identification of protective factors and seek to replace health-impairing behavior with health-protective behavior contribute to enhanced public health. Prenatal programs have made pregnancies safer and infants healthier. Similarly,

Figure 3

Risk factors for leading causes of death

Causes of Death	Risk Factors
Heart Disease	Tobacco, Obesity, Elevated BP, Cholesterol, Sedentary Lifestyle
Cancer	Tobacco, Improper Diet, Alcohol, Environmental Exposures
Cerebrovascular Disease	Tobacco, Elevated BP, Cholesterol, Sedentary Lifestyle
Unintentional Injuries	Safety Belt Nonuse, Alcohol, Home Hazards
Chronic Lung Disease	Tobacco, Environmental Exposures

Adapted from: McGinnis, M. (1994). The Role of Behavioral Research in National Health Policy. In S. Blumenthal, K. Matthews, and S. Weiss (Eds.), *New Research Frontiers in Behavioral Medicine: Proceedings of the National Conference* (p. 219). Washington, DC: NIH Publications.

Figure 4**Cost of treatment for selected preventable conditions**

Condition	Avoidable Intervention	Cost Per Patient
Heart Disease	Coronary bypass surgery	\$30,000
Cancer	Lung cancer patient	\$29,000
Injuries	Quadriplegia treatment and rehabilitation	\$570,000 (lifetime)
	Hip fracture treatment and rehabilitation	\$40,000
Low-Birth-Weight Baby	Respiratory distress syndrome treatment	\$26,500

Adapted from: McGinnis, M. (1994). The Role of Behavioral Research in National Health Policy. In S. Blumenthal, K. Matthews, and S. Weiss (Eds.), *New Research Frontiers in Behavioral Medicine: Proceedings of the National Conference* (p. 218). Washington, DC: NIH Publications.

early childhood behavioral interventions such as Head Start have demonstrably improved high-risk children's educational and health futures. Among adolescents, a variety of interventions have made a positive difference: Public health programs, public awareness programs such as Mothers Against Drunk Driving, and legal strategies such as raising the minimum legal drinking age and enforcing drunk driving laws more strictly have led to a reduction in the number of alcohol-related accidents and deaths among teenagers. Preparing teenagers to cope with the pressure of peer conformity with regard to alcohol and drug use, sexual behavior, and risk-taking has helped to reduce problem drug use, teenage pregnancy, sexually transmitted diseases, and injury. More generally, research on building self-esteem, increasing coping skills, strengthening family ties, and adhering to medical regimens for immunizations and checkups has consistently demonstrated the powerful influence of behavioral interventions on health status.

Nearly half of all Americans who have ever smoked have quit, with positive consequences for their health as well as the health of those who live and work with them. Other smokers have never quit, either because they do not want to try or because they have tried to quit, have succeeded for a time, but then have returned to smoking. Permanent change to healthy behavior can be achieved but can be very difficult to maintain. Our research must aim to find ways to sustain healthy behavior over the life span. Different interventions are helpful for people at different points in the process. This applies not just to smoking cessation, but to modification of most unhealthy behaviors that are sustained by strong rewards.

Research focused on how to motivate health promoting and health-maintaining behaviors is a priority because the

costs of inaction are too high. According to the U.S. Public Health Service (*Health People 2000*, 1991), the cost of coronary bypass surgery is \$30,000 and treatment for lung cancer is \$29,000. The lifetime treatment cost for a person paralyzed from spinal cord injury is \$570,000 (Fig. 4). The treatment cost for a single case of congenital rubella syndrome is \$35,000, and the cost for Acquired Immunodeficiency Syndrome (AIDS) in 1990 was \$75,000 and is rising. The number of such cases, and the associated expenses and suffering, can be reduced dramatically by effective health promotion. Research on compliance and adherence, media and message variables, target groups, and other factors that affect receptivity to health promotion campaigns are among the areas of investigation that will increase our ability to modify behavior and also reduce health care costs in the United States.

What We Need to Know

To promote health and to improve disease prevention, two broad courses of research should be undertaken: One must address personal variables, and the other, group or social variables. On the personal side, change requires an understanding of how specific individuals, or subpopulations of individuals, perceive and think about a particular issue (e.g., using seat belts, smoking, taking antihypertensive medications, exercising, seeking good prenatal care). Research also is needed to determine personal beliefs about the consequences of health behaviors and individual evaluation of these consequences. On the social side, a better understanding is needed of how the opinions of others shape individual beliefs and opinions. In addition, insight into how social processes support or weaken healthy behaviors is also needed. Finally, we need to know how social and

personal variables interact as individuals choose between safe and risky behaviors. A better knowledge of these factors will help identify how individuals and groups sustain behavior change.

Research on the behavioral aspects of drug use and addiction is another issue. We do not know whether prevention techniques that work with individuals who are less at risk for drug use can be adapted to those who are at most risk or whether entirely new methods will be needed to achieve lasting behavior change. New information about how to counter the immediate reinforcement of drugs with the delayed rewards of good health, how to break the cycle of addiction, and what causes relapse is critical in preventing many diseases and high-risk activities. Research is also needed to identify the most effective interventions at each stage of addiction for different subgroups. To do this well, both physical and psychological characteristics that predict relatively poor response to current treatments must be evaluated in different contexts, and we must learn how to individualize treatments. In the case of highly dependent smokers, for example, nicotine replacements, such as nicotine gum or the nicotine patch, may be more effective when they are supplemented by behavioral interventions. Thus, our research must focus on the behavioral and social aspects of both prevention and treatment.

PROBLEM 2:

How Can We Improve Interactions Between Patient and Health Care Provider?

What We Know

Physicians, nurses, and related health care providers can be powerful agents of change. If these providers intervene in areas of risky behavior such as smoking, obesity, stress, and alcohol and drug use, positive health changes frequently occur. Greater attention on the part of health care providers to the healthful behaviors of patients can reduce costs and promote wellness by affecting adherence, timely use of screening, risk reduction techniques, and use of effective behavior change techniques. The relationship, rapport, and quality of communication between providers and patients can provide economical and powerful means of achieving healthful behaviors and altering risky behaviors. Behavioral management support and the advice of a provider can increase the likelihood that a specified diet will be followed, appropriate prenatal care will be obtained, effective exercise regimens will be developed and maintained, risky behaviors will be reduced, or medications will be taken. Unfortunately, effective behavioral intervention is not currently a routine feature of medical training.

Figure 5

Smoking cessation in relation to income

(Alameda County Study)



Kaplan, G. (1994). Reflections on Present and Future Research on Bio-Behavioral Risk Factors. In S. Blumenthal, K. Matthews, and S. Weiss (Eds.), *New Research Frontiers in Behavioral Medicine: Proceedings of the National Conference* (p. 125). Washington, DC: NIH Publications.

What We Need to Know

We have only begun to learn about the power of using health care providers as agents of change. We need to learn how to use this resource effectively, and how to prepare health care providers with knowledge and better training about their roles as agents of behavior change. The provider-patient relationship is influenced by a number of factors that are only partially understood, and how this relationship affects patient satisfaction, willingness to comply with prescriptions, or other health behaviors is unknown. Research will characterize these factors better and enable us to shape both provider and patient behavior for better health. In this regard, we need to learn how providers gain information about patient needs and behavior. These information sources themselves should be studied to determine their adequacy to convey behaviorally important information. Videotapes, pamphlets, logbooks, and computer simulations are new ways to give information to health care providers and patients, so their effectiveness in persuading people to change their behavior must be tested.

PROBLEM 3: How Do Socioeconomic Differences Affect Health Promotion and Disease Prevention Efforts?

What We Know

For several decades, evidence has been accumulating that factors related to socioeconomic status (SES) profoundly influence the likelihood of disease (morbidity) and death (mortality). This holds for deaths from nondisease causes as well — the death rate is twice as high in the lowest SES groups as it is in the higher SES groups. Recent trends have increased the disparity between the health of upper and lower socioeconomic groups, with serious implications for the well-being of our population and the economy of our health care system.

Reasons for poorer health among people of lower socioeconomic status are not well understood. Higher prevalence of lifestyle-related risk factors for disease among lower social status groups, as well as their lower rates of involvement in health-promoting activities, failure to use preventive health services, high rates of illiteracy, and low rates of success when enrolled in lifestyle modification interventions contribute to the problem. However, these factors do not fully explain differences in morbidity and mortality. Heart disease risk is about 2 1/2 times higher in people in lower grade occupations. Differences in levels of smoking, blood pressure, blood cholesterol, and other

tradition risk factors account for some of this difference in risk, but the additional risk imparted by lower job status is still substantial. Low SES groups may also be more at risk for disease because of the presence of environmental stressors found in high-density, inner-city environments, as well as greater exposure to occupational hazards or chronic domestic or occupational stress.

What We Need To Know

If we are to alter the influence of SES on health, it will be necessary to uncover the precise mechanisms and processes through which social factors exert their effects. Because the impact of SES on health is large, the potential public health and economic returns for investing in research required to provide effective prevention and intervention services are very great (Fig. 5). It is clear that the effects of socioeconomic status on health are complex, and that devising effective new responses to these effects will profoundly influence significant public health problems.

There are many ways that the effects of SES on health should be studied. Some include the way we collect information about health. Typically, health surveys in the United States have not included detailed information about socioeconomic status and related psychosocial variables that are necessary for an adequate understanding of the breadth of the problem, its geographic pattern, or ethnic and sociocultural differences. Development of innovative models for weighing SES indicators and for measuring length of exposure to low SES is needed for studies of vulnerability to disease as well as resilience in the face of negative effects. For example, are certain kinds of job stressors linked with specific psychological conditions, and are certain individuals selectively vulnerable? Clinical trials should include comprehensive information about demographic and socioeconomic variables to permit the examination of such questions.

For a variety of reasons, including the growth of managed health care and technological advances, the United States is undergoing rapid changes in health care delivery. However, these changes do not penetrate all social strata uniformly or simultaneously. We must document differences in health care utilization and the effects of various social, behavioral, and psychological influences on access to and level of care available. If the reasons for socioeconomic differences in morbidity (disease) and mortality (death) can be better understood, then behavioral interventions can be modified so that they have maximum effect at each socioeconomic level.

CHALLENGE 3

Increasing Knowledge of Health-Relevant Processes Among Understudied Groups

Not very long ago, what we knew about disease and health care could be summarized in scientific literature that concentrated largely on white male subjects. With increased emphasis on studies of women, both comparatively and independently of men, has come the recognition that men and women have many different psychological characteristics, social and biological tendencies, vulnerabilities, and pathological processes. Women are more likely than men to suffer from some diseases, less likely to suffer from others, and they exhibit different coping and psychophysiological reactions during stress. The same appears to be true of ethnic and racial groups and subgroups, suggesting that the traditional focus on one gender or ethnic or socioeconomic group likely obscures important differences or special needs or characteristics of problems in other groups.

Obviously, this does not provide a good basis for health care. Many populations have special characteristics, and these characteristics affect risk of health problems, treatment in the health care system, and responsiveness to prevention and treatment.

While these differences have received some attention, the complexities of different biological predispositions, social and cultural conditions, and opportunities in our society have generally not been considered in the study of health and illness. Differences in behaviors, attitudes, reactions to stressors or symptoms, exposures to violence, and extent and nature of stress exposure affect all aspects of health, from the etiology or origin of disease to the use of health care services and responsiveness to prevention efforts.

There is relatively little information on health issues for traditionally understudied groups, including women, ethnic and cultural minority groups, rural populations, the urban poor, and the homeless. Each group poses unique challenges for preventing disease and promoting health. To serve these populations better, to understand more fully the impact on health of the conditions that shape their daily lives, and to reduce health care costs, we must identify specific health-related needs of these groups and systematically evaluate the impacts of disease, stress, health care, and prevention. This will enhance efforts to reduce disease and premature death across the broad and diverse U.S. population and should also reduce overall costs of health care.

Significant progress in this formidable task requires at least the following:

- ◆ We must learn about acquisition and maintenance of health-impairing and -promoting behaviors and about treatment and use of health care in different subgroups.
- ◆ We must develop ways to enhance preventive and treatment-related self-care in all segments of our society.
- ◆ We must address more effectively the growing problem of domestic and social violence and abuse.

PROBLEM 1:

How Are the Development and Maintenance of Health-Impairing Behaviors or Response/Access to Health Care Affected by Different Factors in Different Groups?

What We Know

The incidence of health problems is different across population groups. For example, women are more likely to exhibit eating disorders than men, minorities disproportionately account for cases of AIDS, and the rates of smoking among men and women across minority groups are different. We also know that the causes of certain chronic diseases, such as diabetes, alcoholism, and heart disease, are also different across population groups.

In addition, the processes by which these conditions or behaviors develop are different, and attempts to alter behaviors or disease risk must focus on these variable processes. So, we must systematically evaluate factors related to behavioral risk in groups that have traditionally received little or no research attention. We have begun to recognize that there are basic differences in physiology, behavior, and environments of different population groups. Now we must examine the impact of these differences on how diseases develop and progress, how they are treated, and how to prevent them in the first place.

Unequal access to prevention programs or regular health care also results in more disease and death in certain population groups (Fig. 6). So does the way group members interact with the health care system and how, in turn, the system treats them. Differences in responsiveness to treatment, in seeking medical attention, and in risk perception are important in determining how effectively people use health care services.

We know that less effective use of screening services and disproportionate rates of disease and death have been found among some groups for some diseases. For example, findings indicate that African-Americans suffer higher mortality than do whites from similar stage cardiovascular disease, and that heart disease is less likely to be diagnosed in women than in men. African-American men appear more likely to develop some forms of cancer than are others, but are least likely to detect these cancers early.

Studies of care-seeking indicate that African-American women delay longer than white women in seeking care for breast symptoms. Similarly, older women, who are often at greater risk, are less likely to seek preventive care for breast cancer. Thus, group differences have a profound impact on the way services are used, and in resulting morbidity (disease) and mortality (death) rates (Fig. 7). We must study and understand these differences in order to improve health and prevent disease.

What We Need to Know

Better health care in all segments of our population requires more research on the bio-behavioral aspects of disease development, prevention, and treatment in understudied populations, with an emphasis on diseases or health problems that are unique or unusually common in these groups. Interactions among genetic, socioeconomic, and cultural or social factors appear to be very important in health and disease and need much more research attention (Fig. 8).

We must learn more about specific factors related to prevention of health-impairing behaviors among these groups so that effective interventions aimed at the adoption of safer sex practices, healthier lifestyles, and drug-free behavior can be developed. Evaluation of differences in sources of stress for different groups as well as differences in how they cope and respond to stress is also very important.

Overall, factors related to disease and decline must be targeted: Among the specific problems that require study are psychosocial and behavioral factors that contribute to malnutrition in the elderly, the poor, and in other groups; the role of life stress and life transitions in eating, smoking, or substance use problems; and the efficacy of interventions to affect disease processes to improve nutrition and help establish healthy attitudes toward exercise, food, drugs, smoking, and health-promoting behaviors in these groups.

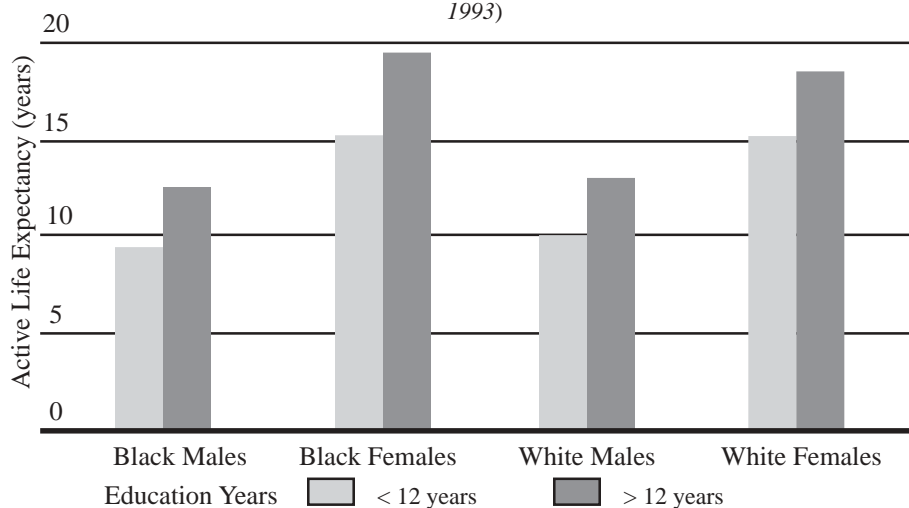
We must determine the frequency and causes of misdiagnosis and ineffective diagnosis, inadequate treatment, and dissatisfaction with treatment for major health problems among ethnic and cultural minority groups, women, and other understudied groups. Attitudes and stereotypes, barriers to use of services, and other factors that make quality health care more difficult to obtain or less useful for certain populations — we must investigate these.

We must identify factors that influence the nature and efficacy of physician/care provider recommendations to diverse groups, including ethnic and cultural minority groups, low income groups, women, and the elderly, and evaluate whether traditional treatments are the most effective

Figure 6

Active life expectancy at age 65 in relation to education level and race

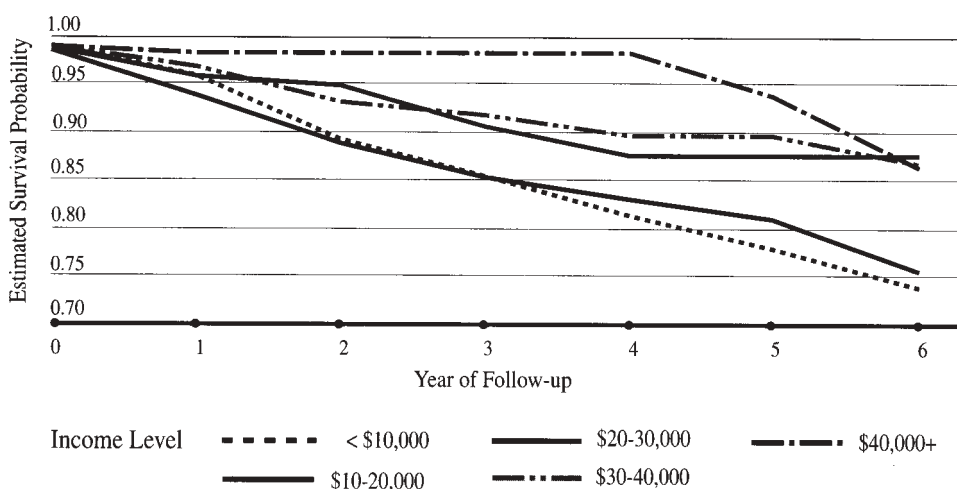
(Adapted from Guralnik et al., 1993)



Kaplan, G. (1994). Reflections on Present and Future Research on Bio-Behavioral Risk Factors. In S. Blumenthal, K. Matthews, and S. Weiss (Eds.), *New Research Frontiers in Behavioral Medicine: Proceedings of the National Conference* (p. 125). Washington, DC: NIH Publications.

Figure 7

Estimated survival probability in relation to income



Adapted from: Williams, R.B., et al. *Journal of the American Medical Association*, 1992; 267: 520-524. Reprinted with permission.

for these groups. Understanding differences in behavior, such as why some groups tend to delay seeking care, and identifying factors that shape such differences in health behavior will give us the tools to improve health for us all.

PROBLEM 2:

How Can We Increase Effective Self-Care and Early Detection of Disease Among Diverse Groups?

What We Know

Problems in fostering effective use of self-care among some population groups may be due to a mismatch of assumptions or values between these groups and health care providers. There are many examples of failed health promotion or disease prevention programs that did not consider basic values or beliefs of targeted populations. Research suggests that how people experience health problems or symptoms often differs across population subgroups.

We know that pain can be experienced differently in various ethnic or cultural groups, and findings suggest that symptoms or other important cues or information are also experienced or interpreted differently. Different cultural groups have different ways of viewing disease, and the meaning of disease and treatment may vary by age, rural or urban locale, minority group, and gender. Self-care, including practices such as exercise, a healthy diet, and medical self-care, is the most common form of health care

in this country. Effective self-care is linked to a variety of positive health outcomes, and adoption of healthy self-care behavior and preventive behaviors is critical for reducing health costs and enhancing quality of life.

What We Need to Know

The social and behavioral barriers that keep certain population groups from using important treatment and self-care behaviors must be broken down. The most critical barriers are those that interfere with cancer, heart disease, and diabetes screening, or with the use of prenatal care among women of various racial or ethnic groups and from rural and urban settings. In different population groups, we need to identify the characteristics of symptoms and social settings that support self-care behaviors, as well as the factors that determine whether people are aware of their risks for certain health problems and whether they screen themselves for those problems.

Special attention should be paid to groups with limited access to health care, such as young or poor pregnant women, the poor and or rural elderly, people who are physically or cognitively challenged, and recent immigrants. More research is critical if we are to understand and overcome barriers, such as language or culturally insensitive systems, that make adoption of self-care or preventive behaviors less likely for individuals. Finally, we must identify and supply the resources and supports that are needed at different points in long-term self-care and surveillance for members of all groups.

PROBLEM 3:

How Can We Meet the Growing Incidence of Abuse and Violence?

What We Know

Societal and domestic violence have been serious health problems. Sexual abuse, extreme emotional maltreatment, and physical abuse of women and children pose new challenges for health care providers, law enforcement, and all of society. The incidence of domestic violence appears to vary across population groups and is higher among the socially and economically vulnerable in our society.

Unprecedented violence among younger members of minority groups has resulted in homicide becoming a primary cause of death in young men in some groups. Consequences of violence and abuse vary by gender as well as in different groups, such as among children, the physically or cognitively challenged, and among the elderly. Violence and abuse can have long-lasting physical and emotional consequences for both perpetrators and victims.

How effectively victims cope with their distress has been found to vary across groups. We have learned a great deal about the mental and physical health consequences of abuse and have developed treatments for posttraumatic stress disorder among victims of abuse and domestic violence, but we must learn how to adapt these treatments to the special needs of particular groups.

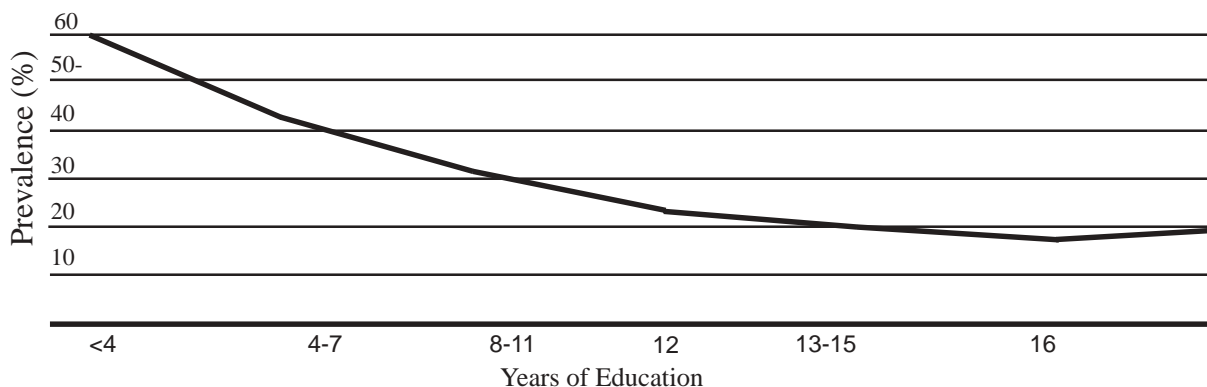
What We Need to Know

We do not know enough about health, behavioral, and social conditions that precede violent and abusive behavior, nor do we know enough about its consequences to health. Without knowledge of the many paths to violence, prevention initiatives are doomed. And without knowledge of the long-term effects of violence, the treatment of its victims is incomplete and does not end their suffering. What are the antecedents of violent and abuse behavior toward women, toward children, toward young African-American men, toward other racial and ethnic as well as religious groups, toward the aged, toward government and government workers, and between gangs? They are probably different in each of these instances and are certainly ill-understood. Nor have we focused our attention on the lingering effects of violence. What are the risks for chronic illness among survivors of abuse and violence? What are the best ways to cope with the aftereffects of trauma, including ongoing distress? How do we assess risk of prolonged effects of violence, and how do we diagnose those who may be suffering such effects? We must gain a thorough understanding of the antecedents of violence and of its consequences to health, if we are to reduce this threat to our national well-being.

Figure 8

Prevalence of fair or poor health as a function of education level

(National Health Interview Survey; adapted from Series 10, No. 179)



Kaplan, G. (1994). Reflections on Present and Future Research on Bio-Behavioral Risk Factors. In S. Blumenthal, K. Matthews, and S. Weiss (Eds.), *New Research Frontiers in Behavioral Medicine: Proceedings of the National Conference* (p. 125). Washington, DC: NIH Publications.

CHALLENGE 4

Reshaping the Health Care System to Meet Tomorrow's Needs

The effectiveness of treatment depends on the ability of providers to deliver care effectively and on consumers' ability to seek care appropriately, comply with a prescribed course of treatment, and regulate their own health behavior. The major diseases we now face demand interdisciplinary treatment and prevention designed to meet the dynamic needs of an ever-changing population. Blended care in which treatment teams approach diseases from biological, psychological, and sociocultural perspectives offers the best hope of improving treatment efficacy and cutting costs (Fig. 9). Because we have been effective in reducing premature mortality and because of the aging of our society, there will be an increasing number of people in need of care for chronic illnesses. That will place new demands on the health care system that will not be fully satisfied by the traditional doctor-patient relationship. We must anticipate this change and adjust the health care system so that it can meet the demand. Appropriate contributions by the behavioral sciences, both to health care delivery and to medical and nursing education, are critical to the development of health care professionals and systems optimally prepared to meet tomorrow's challenges.

As we approach the 21st century, several aspects of health care seem on the verge of revolution. Questions about appropriate levels of involvement of health care providers and patients themselves have surfaced. Should primary care physicians be trained to understand and anticipate psychological problems, adherence to regimens, and similar behavioral issues? Similarly, the inherent role of nurses as "front-line" practitioners demands multidisciplinary training; behavioral scientists have begun to ask how much training in medicine, nursing theory, and psychology is necessary to provide quality health care. The role of the patient in monitoring his or her own health is also being examined. We must study consumer satisfaction with the health care system and devise methods of increasing patient participation in medical decision-making. Effective patient education and the understanding that knowledge, attitudes, and feelings of both the patient and the health care provider interact in shaping the health behavior of the patient are critical.

We know from cross-national comparisons that the United States has the most costly, but not necessarily the best, health care system in the world. To improve health care while cutting costs is among the most pressing national

challenges. Knowledge is a necessary base from which to initiate efficient, effective change. The behavioral and social sciences provide an underutilized base of knowledge on which many elements of a cost-effective, high-quality health care system should be built. At the same time, the tools of these sciences are well suited to monitoring the efficacy of the health care system. We must define the system more broadly, as more than doctors, nurses, clinics, and hospitals. The system must center on the patient as a self-caregiver and family and friends, as well as community-based organizations as additional health care providers. Prevention and health promotion or maintenance must be made as important in the health care system as disease treatment is now. Corporate health practices, government policies, and settings such as schools, churches, and workplaces that are important sites for fostering healthy behavior must become parts of the nation's health care system. Such a system must be a network of interconnected and related services for consumers, providing mental and physical health services, health education, and mechanisms for health maintenance.

The best approach to achieving these goals includes the following objectives:

- ◆ An important priority is development of information systems and assessment tools that can integrate behavioral perspectives into health care.
- ◆ We must improve access to health care and create a system that is more responsive to all our citizens and that embraces a broader view of health care.
- ◆ Models of training in medicine and other health care professions need to be reevaluated and revised to facilitate more effective disease prevention and health promotion.

PROBLEM 1: What Are the Essential Elements of Health Care Change and What Information Systems Are Needed?

What We Know

Health care systems provide for assessment and diagnosis of health and disease, including ongoing disease processes, and for the treatment of current diseases and

disorders. They also can provide assessment of risk for future diseases and effective intervention to reduce disease risk. These systems provide the setting and resources for accomplishing health care objectives, as well as a system of monitoring, evaluation, and rewards for those who provide that service.

We know that effective assessment and prevention of disease is often not a primary concern in today's health care system and that health care settings often provide few means or little incentive to adopt or expand such programs. We also know that fostering the interface between provider and patient, as well as access and coordination of health care with communities and local agencies addressing health in vocational and recreational settings, is important to developing a more responsive system. In addition, the efficiency, productivity, and cost-effectiveness of the health care system is a critical factor in its performance. Early interventions are effective in managing later costs of care, and the flexibility needed to incorporate changing technological advances and evaluate their effectiveness in service delivery is also important to effective care. For example, the new demands and scientific issues raised by organ transplantation require many types of evaluation, and these must be comprehensive, drawing on several specialties, and across many disciplines and perspectives. Evaluating alternative approaches to disease treatment, caregiving for the chronically ill, and prevention pose similar challenges and are clearly important in providing optimal health care.

What We Need to Know

One goal of behavioral research is to provide an empirical base of knowledge for developing optimally effective and sensitive health care systems. This knowledge

base must consist of data that will help us realize the most beneficial outcomes at the most reasonable costs.

We not only need to develop information about health and behavior, we must design and implement systems by which this information is disseminated and incorporated into practice. We also must ensure that appropriate models for change, evaluation of change, and enhancement of services are achieved. Attention to changes in health care, to mechanisms of change in the system, and to application of outcome-based evaluation of behavioral interventions must be accompanied by sensitivity to and optimal use of effective channels of communication and advocacy. Evaluation and outcome research must become more common and must be responsive to the complex consequences and benefits of different developments. We also need to construct assessment strategies and measures for evaluating a broad range of health-related activities in varied settings.

We know relatively little about the organizational dynamics of our health care system. We need to know how to apply decision-making theories to help determine use and system choices. It is also necessary to learn more about how to design and evaluate methods for including patient and family participation in health care decisions, how best to include family systems in health promotion, how to extend health care to work and other settings, and how to incorporate patients' and families' needs, beliefs, and attitudes. Questions such as how to measure efficacy, effort, and cost associated with application of prevention programs and how to determine the best way to incorporate quality of life in decision-making processes also must be addressed. Finally, the best health care will continually demand coordination of prevention and treatment across the entire system.

Figure 9

***The bottom line:
Reduction in frequency of treatments as a result of
various clinical behavioral medicine interventions***

Treatment	Frequency Reduction
Total ambulatory care visits	-17%
Visits for minor illnesses	-35%
Pediatric acute illness visits	-25%
Office visits for acute asthma	-49%
Office visits by arthritis patients	-40%
Cesarean sections	-56%
Epidural anesthesia during labor and delivery	-85%
Average hospital length of stay for surgical patients (in days)	-1.5%

Adapted from: McGinnis, M. (1994). The Role of Behavioral Research in National Health Policy. In S. Blumenthal, K. Matthews, and S. Weiss (Eds.), *New Research Frontiers in Behavioral Medicine: Proceedings of the National Conference* (p. 25). Washington, DC: NIH Publications.

PROBLEM 2:

How Can the Health Care System Be Modified to Allow Access by More People?

What We Know

We know that prevention programs can help people stay healthy and that increasing the quality of communication between consumers and providers of health care can also improve health care. We have learned a great deal about barriers to accessibility of the health care system, and there are many modifiable factors that can enhance or block access to quality care.

In seeking to make the health care system both more accessible and more effective, we must use this knowledge to help people stay healthy, to increase ease of access to screening services, to foster service delivery in the schools and workplace, and to establish flexible and transportable services. Access to health care is complex. For example, many people fall outside traditional work settings and have difficulty obtaining adequate insurance. Millions of U.S. citizens are uninsured, diminishing their access to care. At the same time, the system has focused on costly inpatient care, only recently changing emphasis to less costly outpatient care. This effort has lacked coordination among different providers, and inpatient procedures are still common. Only a small fraction of health care expenditures is spent on prevention, and equally little attention has been paid to increasing access for consumers by changing current procedures.

What We Need to Know

We have not systematically studied the factors characterizing the health care system itself as a reason for access problems or ineffective use of health care services. It makes sense to focus research on ways of bringing people into a more active role in their health care and to develop methods for increasing patient participation in health care decisions. A scientific basis for promoting participation and effective self-care will ultimately minimize people's use of the system, and we must increase access to the information and skills for doing this.

PROBLEM 3

What Models of Training Best Prepare Care Providers for Today's Realities?

What We Know

The basic training models used to prepare health care providers for careers in medicine or in other health fields evolve continuously, but they have not been modified specifically to meet the future changes in health care. Medical education has recently undergone curricular

changes and has become more problem-based. Some attempts have been made to include more behavioral science in these curricula, and increasing specialization in medicine, though not controlled, has been countered by emphasis on broader training and general or family practice. Schools of nursing, pharmacy, and allied health sciences have also made changes in traditional training models. The change process has already begun, and evaluation efforts are commencing as well. Similarly, the roles of several disciplines, including nursing, pharmacy, and psychology, are changing in ways that support responsible medical care.

What We Need to Know

The shape of future health care delivery is still unclear and, as a result, it is difficult to anticipate the best models for training health providers. An empirical basis for identifying optimal training and evaluation procedures and models must be developed. We must evaluate and continually improve our training models and develop sensitive, appropriate plans for their use. At the same time, training of providers in wellness, prevention, rehabilitation, and behavioral medicine must be implemented and evaluated. Training in decision-making and evaluation of systems should also be evaluated as a component of provider training. We must match specialty training of professional and paraprofessional providers with specific patient and treatment requirements and then compare their outcomes.

Interdisciplinary training and collaboration must be fostered and evaluated. Appropriate role and team dimensions also must be identified. For example, alcoholism is often undiagnosed and mental disorders also may be missed among people who are ill with other life-threatening diseases. The first point of contact with health care for most people is a general practitioner or primary care provider; these providers must be better trained to detect and treat or refer to other professionals such threats to successful treatment or disease prevention. At the same time, incentives for treating patients with alcohol or drug use disorders or other conditions that would contribute to later disease must be established. We must learn the best way to formulate treatment standards and how to communicate them to health care providers.

RECOMMENDED READINGS

Basic Behavioral Science Research for Mental Health: A National Investment. A report of the National Advisory Mental Health Council. NIH Publication No. 95-3682, 1995.

Health and Behavior. Report to Congress. National Institutes of Health, November 1991.

Healthy People 2000. National Health Promotion and Disease Prevention Objectives. DHHS Publication No. (PHS) 91-50212, 1991.

Mrazek, P.J. and Haggerty, R.J., eds. *Reducing Risks for Mental Disorders: Frontiers for Prevention Intervention Research.* National Academy Press, Washington, DC, 1994.

DOING THE RIGHT THING

A RESEARCH PLAN FOR HEALTHY LIVING

HUMAN CAPITAL INITIATIVE (HCI) COORDINATING COMMITTEE

Milton D. Hakel, Bowling Green State University (Chair)
 Rue Cromwell, University of Kansas
 Kay Deaux, City University of New York-Graduate School
 Mitchela Gallagher, University of North Carolina-Chapel Hill
 James G. Greeno, Stanford University
 John W. Hagen, University of Michigan
 Charles A. Perfetti, University of Pittsburgh

COMMITTEE ON DOING THE RIGHT THING

Co-Chairs

Andrew S. Baum, University of Pittsburgh Medical Center
 Sheryle J. Gallant, University of Kansas

Members

John T. Cacioppo, Ohio State University
 Barbara G. Melamed, Yeshiva University
 Cheryl Travis, University of Tennessee

PARTICIPATING ORGANIZATIONS

American Association of Retired Persons
 American Psychological Association and
 APA divisions:
 Addictions
 Adult Development and Aging
 Exercise and Sport Psychology
 Experimental Analysis of Behavior
 Experimental Psychology
 Health Psychology
 Physiological and Comparative Psychology
 Psychologists in Public Service
 Psychopharmacology and Substance Abuse
 Rehabilitation Psychology
 Society for Industrial and Organizational
 Psychology
 Society for Personality and Social Psychology
 Society for the Psychological Study of Social
 Issues
 Society for a Science of Clinical Psychology
 American Psychological Society
 Animal Behavior Society

Association for the Advancement of Behavior Therapy
 Association for Behavioral Analysis
 Behavioral Genetics Association
 Center for the Advancement of Health
 Federation of Behavioral, Psychological, and
 Cognitive Sciences
 The Fetzer Institute
 National Cancer Institute
 National Heart, Lung, and Blood Institute
 National Institute of Child Health and Human
 Development
 National Institute of Mental Health
 National Institute on Aging
 National Institute on Alcohol Abuse and Alcoholism
 National Institute on Drug Abuse
 National Institute for Occupational Safety and Health
 Society for the Advancement of Behavior Analysis
 Society for the Advancement of Social Psychology
 Society for the Study of Nicotine
 Society of Behavioral Medicine
 Southwestern Psychological Association

SPONSORING ORGANIZATIONS

American Psychological Society
 American Psychological Association
 APA Division of Health Psychology
 National Institute of Mental Health

PARTICIPANTS AND REVIEWERS

The following individuals took part in the HCI Workshop on Healthy Living and/or served as reviewers for this research plan.

- Ronald Ables, *National Institute on Aging*
 Vincent J. Adesso, *APA Division on Addictions*
 Frank M. Ahern, *Behavioral Genetics Association*
 Fred Altman, *National Institute of Mental Health*
 Andrew S. Baum, *American Psychological Association*
 Ruth A. Bookstaber, *Southwestern Psychological Association*
 Walter Borman, *Society for Industrial and Organizational Psychology*
 M. Michelle Burnette, *Society for the Advancement of Behavior Analysis*
 John Cacioppo, *Society for Personality and Social Psychology*
 Wayne J. Camara, *American Psychological Association*
 Michael F. Cataldo, *APA Division on Experimental Analysis of Behavior*
 Tom Cayton, *APA Division of Health Psychology*
 MaryLou Cheal, *APA Division of Physiological and Comparative Psychology*
 Mark Cohen, *APA Division of Psychologists in Public Service*
 Carlo C. DiClemente, *APA Division on Addictions*
 Roger A. Drake, *Society for the Advancement of Social Psychology*
 Jacqueline Dunbar-Jacob, *Society of Behavioral Medicine*
 Craig Ewert, *Society of Behavioral Medicine*
 Sheryle Gallant, *American Psychological Association*
 Robert J. Gatchel, *APA Division of Health Psychology*
 Celia Gershenson, *Association for Behavior Analysis*
 Eugene R. Gilden, *APA Division of Health Psychology*
 Judith P. Goggin, *APA Division of Experimental Psychology*
 Lynn Gordon, *The Fetzer Institute*
 Jesse Gruman, *Center for the Advancement of Health*
 David A. F. Haaga, *Association for the Advancement of Behavior Therapy*
 Milton D. Hake, *American Psychological Society (HCI Coordinating Committee)*
 Bartley G. Hoebel, *APA Division of Physiological and Comparative Psychology*
 Albert R. Hollenbeck, *American Association of Retired Persons*
 Arthur MacNeil Horton, *National Institute on Drug Abuse*
 David Johnson, *Federation of Behavioral, Psychological, and Cognitive Sciences*
 Peter Kaufmann, *National Heart, Lung, and Blood Institute*
 Daniel Kirschenbaum, *APA Division of Exercise and Sport Psychology*
 Patricia C. Kober, *American Psychological Association*
 Lynn T. Kozlowski, *Society for the Study of Nicotine*
 Norman A. Krasnegor, *National Institute of Child Health and Human Development*
 Alan G. Kraut, *American Psychological Society*
 Robert Levine, *Society for the Advancement of Social Psychology*
 Laura Leviton, *APA Division of Health Psychology*
 Susan P. Limber, *Society for the Psychological Study of Social Issues*
 Susan Martin, *National Institute on Alcohol Abuse and Alcoholism*
 Barbara G. Melamed, *American Psychological Association*
 Leonard L. Mitnick, *National Institute of Mental Health*
 Susan Nayfield, *National Cancer Institute*
 C. Tracy Orleans, *Society of Behavioral Medicine*
 Marcia Ory, *National Institute on Aging*
 Donald A. Overton, *APA Division of Psychopharmacology and Substance Abuse*
 Michael Renner, *Animal Behavior Society*
 Rene Royak-Schaler, *Society for the Psychological Study of Social Issues*
 Steven Sauter, *National Institute for Occupational Safety and Health*
 Stanley F. Schneider, *National Institute of Mental Health*
 Joseph R. Scotti, *Society for the Experimental Analysis of Behavior*
 Lewis S. Seiden, *APA Division of Psychopharmacology and Substance Abuse*
 Zili Sloboda, *National Institute on Drug Abuse*
 Arthur A. Stone, *Society for a Science of Clinical Psychology*
 Denise G. Tate, *APA Division of Rehabilitation Psychology*
 Cheryl Travis, *American Psychological Association*
 Suzanne Wandersman, *American Psychological Association*
 Sherry L. Willis, *APA Division on Adult Development and Aging*