

OVERVIEW OF
NIH-SUPPORTED PROGRAMS AND ACTIVITIES
IN HEALTH PROMOTION

*Research, training, education, and communications & outreach activities
supported by the National Institutes of Health (NIH)*

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OVERVIEW OF NIH-SUPPORTED HEALTH PROMOTION ACTIVITIES

The National Institutes of Health (NIH) is the Federal focal point for medical research in the U.S. The goal of this research is to acquire new knowledge to help prevent, detect, diagnose, and treat disease and disability. NIH works toward its mission by conducting research in its own laboratories and supporting the research of non-Federal scientists; assisting in the training of research investigators; and fostering communication of medical and health sciences information.

In support of this mission, the NIH has an extensive portfolio of research on health promotion and disease prevention, as well as programs to disseminate the findings to health professionals and the public. The findings from such research have been applied in the U.S. and other populations throughout the world and have led to remarkable gains in survival and quality of life over the past 50 years. There is an increasing interest in promoting the health of the public so as to improve personal behaviors and foster healthy environments and thus avoid the risk of disease.

A subset of NIH prevention research that can be called “health promotion research” is directed toward developing strategies for promoting healthy behaviors and identifying factors that pose general risks to health, including environmental factors. These factors have sometimes been characterized as the “underlying causes of death and impaired function” and classified as “primordial risk factors” because these inherited susceptibilities, behaviors and exposures represent the earliest antecedents to established risk factors. Disparities in health among racial/ethnic groups can be attributed, in part, to differences in health risks and their management, and will require culturally appropriate efforts to institute change. Reducing and ultimately eliminating such disparities will require research to develop and implement more effective health promotion strategies.

Health promotion is directed more broadly to the entire population, whether or not identified as being at risk for a particular condition, and focuses on personal behaviors (smoking, physical activity, dietary intake, safe sexual behavior, substance abuse, and violence) and environmental factors (water, air) that are important to improving health and function. Obesity, a significant and complex health issue, is being addressed through a Surgeon General’s initiative. The ten-year objectives for improving many of these aspects of health are provided in the *Healthy People 2010* document developed within the Department of Health and Human Services (HHS).

Disease prevention and health promotion is harmonious with the missions of the NIH Institutes and Centers (ICs) and is well integrated into their respective research activities. An initiative by the Director of NIH, “New Preventive Strategies Against Disease”, has encouraged cross-cutting studies supported by the ICs over the past three years. About one-quarter of the NIH budget is devoted to prevention-related research. Several other Federal agencies conduct research and contribute toward new knowledge and advances in disease prevention. These include the Centers for Disease Control and Prevention (CDC) and the Agency for Health Care Research and Quality

(AHRQ), to name a few. In addition to its large investment in research on disease prevention and health promotion, the NIH collaborates with other federal agencies, as well as with some private-sector organizations, and facilitates their prevention efforts. Additional information on programs and activities supported by the NIH ICs is available on-line at <http://www.nih.gov/icd>.

Outline

Health promotion programs supported by the Institutes, Centers, and Offices of the National Institutes of Health (NIH) include research grants and contracts, training awards, education programs, and communications and outreach activities. This inventory overview is not intended to be all-inclusive, but rather represents the scope and variety of health promotion activities supported by the NIH. No priority is implied by the order in which the examples are provided.

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OFFICE OF THE DIRECTOR

Office of Disease Prevention

The Associate Director for Disease Prevention was mandated by Congress in 1985 and charged with stimulating and coordinating trans-NIH collaboration on disease prevention activities with governmental agencies and private sector collaboration, as well as monitoring and reporting on prevention research progress and needs. The Office of Disease Prevention, Office of the Director, NIH, was authorized in 1986 by Public Law 99-158. The Office provides overall coordination and guidance to the 27 research Institutes and Centers (ICs) regarding disease prevention and health promotion initiatives, policies, and activities. NIH prevention programs include research, training, exchange of knowledge, and public education that seeks to improve the health of the public.

ODP staff provide technical support and advice to a number of Departmental and interagency projects and initiatives related to disease prevention research, often to ensure a scientific evidence base for proposals, policies, and decisions. ODP also serves as a central contact point for identifying NIH staff with scientific expertise to work on special workgroups and committees that address prevention issues. Following are several major projects:

Healthy People 2010. ODP coordinates the participation of NIH in the development, review, monitoring, and implementation of HP2010 objectives. NIH is the co-lead agency for 12 of the 28 focus areas of HP2010. ODP serves as the central contact point for communication and coordination on HP2010 activities between NIH ICs, other agencies, and the Department.

Guide to Clinical Preventive Services. The ADDP serves as the NIH representative to the USPSTF developing the Clinical Guide. The Guide will provide evidence-based recommendations for preventive services in the clinical setting. ODP ensures that written products are reviewed by NIH experts in the field and that the most up-to-date scientific evidence is considered in making recommendations.

Guide to Community Preventive Services. ODP serves as the NIH liaison representative to the Task Force developing the Guide. The Community Guide will provide evidence-based recommendations for population-based preventive interventions for a number of health behaviors and conditions. ODP has supported the development process by participating in Task Force meetings and in identifying NIH subject matter experts for each chapter development team responsible for examining the scientific evidence and developing recommendations.

Development of an NIH Population-Based Prevention Research Database. Currently, ODP is working with the NIH Institutes and Centers to identify relevant grants and contracts that will be stored on a searchable database accessible to the public.

Office of Behavioral and Social Sciences Research

The National Institutes of Health has a long history of funding health-related behavioral and social sciences research, and the results of this work have contributed significantly to our understanding, treatment, and prevention of disease. Indeed much of our recognition of the health risks associated with smoking, physical inactivity, alcohol and drug abuse, poverty, and unhealthy diets is the result of NIH-funded research. In 1993, the United States Congress established the Office of Behavioral and Social Sciences Research to further the ability of the NIH to capitalize on the scientific opportunities that exist in behavioral and social sciences research. In addition, the Office provides a focal point for the coordination of trans-NIH activities on health and behavior. Among the many activities currently underway, three address health promotion in particular: Behavior Change Initiative, Behavior Change Consortium, and Health and Behavior Report.

In October of 1997, the NIH Office of Behavioral and Social Sciences Research (OBSSR) announced a special Request for Applications (RFA) focusing on "Innovative Approaches to Disease Prevention Through Behavior Change." The goal of this initiative was to stimulate investigations of innovative strategies designed to achieve long-term healthy behavior change. The health behaviors of interest -- tobacco use, insufficient exercise, poor diet, and alcohol abuse -- are among the top ten causes for morbidity and premature mortality. The RFA solicited intervention studies aimed at either comparing alternative theories related to mechanisms involved in behavior change, or assessing the utility of a particular theoretical model for changing two or more health-related behaviors, rather than simply demonstrating the efficacy of a single behavior change program.

Coordinated by OBSSR, the four-year research grant program is co-sponsored by several NIH components, including the Office of Disease Prevention (ODP), the Office of Research on Women's Health (ORWH), the Office of Dietary Supplements (ODS), the National Cancer Institute (NCI), the National Center for Complementary and Alternative Medicine (NCCAM), the National Heart, Lung, and Blood Institute (NHLBI), the National Institute on Aging (NIA), the National Institute on Alcohol Abuse and Alcoholism (NIAAA), the National Institute of Allergy and Infectious Diseases (NIAID), the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), the National Institute of Child Health and Human Development (NICHD), the National Institute of Dental and Craniofacial Research (NIDCR), the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), the National Institute of Mental Health (NIMH), the National Institute of Neurological Disorders and Stroke (NINDS), and the National Institute of Nursing Research (NINR).

These organizations jointly issued the RFA because the focal behaviors of tobacco use, exercise, diet, and alcohol abuse are behaviors with implications for a wide array of health outcomes for both women and men, including cancer, infectious and allergic diseases, osteoporosis, diabetes, heart disease, arthritis, depression, periodontal diseases, obesity, and kidney diseases, as well as related outcomes such as mood and affect, functional impairment, disability, quality of life, and health care utilization. The behaviors of interest also share a common conceptual basis for

change, and each can benefit from findings from research on learning, motivation, risk perception, and the like. Response to the RFA was substantial, resulting in the submission of 62 applications and funding of 15 grants.

A Behavioral Change Consortium comprised of NIH program staff, research investigators at the 15 sites receiving funding through the Behavior Change Initiative (RFA), and representatives from co-sponsoring private foundations has been established to explore the opportunities for further collaboration across the 15 sites. The goal of the Consortium is to report progress, discuss problems, and share information related to the conduct of the grants. Throughout the duration of the projects, opportunities to collaborate and share information among the investigators are provided through semi-annual meetings sponsored by the American Heart Association.

Recently, the OBSSR commissioned the National Academy of Sciences= Board on Neuroscience and Behavioral Health and the Board on Health Promotion and Disease Prevention to convene a 15-member committee to update the landmark 1982 Institute of Medicine study entitled *Health and Behavior: Frontiers of Research in the Biobehavioral Sciences*. The 18-month study aims to: (1) update scientific findings about the links between health and behavior; (2) identify and review effective applications of behavioral techniques in a variety of settings; (3) identify the factors that enhance the implementation of behavioral interventions; and (4) make recommendations concerning further research, best practices, and financing. Behavioral, psychosocial and biomedical perspectives on health and behavior interactions across the lifespan are considered. Other topics include public health interventions to promote or change specific behaviors, stress and coping, immunology and behavior, and the role of behavior in specific disorders. A workshop and commissioned papers supplement the expertise of the committee. The committee's findings and recommendations will be published in a report that will be widely disseminated to federal agencies and other policy makers, foundations, the media and general public, professional and research organizations, health care industry groups, academic health centers, and consumer and advocacy groups. The final report is expected to be released in Spring 2001.

Office of Research on Women's Health

Prevention is identified in the *Agenda for Research on Women's Health for the 21st Century* as a priority, recognizing that prevention research can and will contribute to preventing disease, preventing the number of deaths, and improving quality of life in women and their families. Prevention research efforts at NIH on women's health seek to address health disparities among different populations of women such as minority, physically disabled, rural women, and women who live in poverty, as well as potential differences in health status between women and men.

Prevention involves limiting the actual occurrence of diseases and supporting the body's systems for maintaining health. It relies on an understanding of how illnesses start, grow, and spread, as well as what biological, psychological, social, cultural, and environmental factors contribute to diseases. Prevention depends on individuals avoiding the identified risk factors, while making healthy lifestyle choices including behavioral changes related to diet, exercise, and routine health

examinations. These choices are meant to promote wellness, a concept that has gained acceptance over the past 10 years. Women of all ethnic and cultural backgrounds and income levels must have equal access to the benefits of research, especially culturally appropriate preventive services.

Some of the major areas of research that ORWH supports with the NIH ICs are in the general areas of physical fitness, nutrition and diet, tobacco cessation among women and potentiating effects of substance abuse, chronic diseases and aging, and mental health. For example, ORWH supports a fall prevention program for high-risk elderly women with the National Institute on Nursing Research (NINR) designed to prevent falls and fall-related injuries, reduce preclinical disability, maintain long-term exercise adherence, and improve quality of life for older women. An exercise intervention for minority college-age women, also funded with NINR, develops and tests a culturally relevant exercise intervention for Black and Hispanic female college students.

The unique feature of another research exercise protocol for minority women, supported by ORWH with NINR, is that it proposes an interdisciplinary approach to understanding of the biobehavioral mechanisms underlying exercise and its relationship to fat metabolism. ORWH also supports with NINR a randomized trial on exercise and peri-menopausal symptoms. The study addresses the medical question about whether exercise will relieve peri-menopause-associated symptoms and/or enhance the effect of hormone replacement therapy in relief of peri-menopause-associated symptoms. The results of this research will inform the benefits of exercise aimed at the management of peri-menopause-associated symptoms.

ORWH supports with the National Cancer Institute (NCI) a study on exercise and quality of life in older women with breast cancer. This study is testing and comparing the efficacy of two modalities in general rehabilitative medicine to enhance patient outcomes: 1) patient education and support programs, and 2) training to increase daily activity in the community.

In the area of mental health, ORWH is supporting a study with the National Institute on Mental Health (NIMH) on the effect on children ages 5 - 11 of maternal depression and the influence on children of treating maternal depression. A study of the gender-specific risks for depression in adolescent girls, also funded with NIMH, combines a longitudinal study which is comparing risk factors for depression in adolescent girls versus adolescent boys. The study is looking at body image and eating disturbances as prospective predictors of depressive symptoms in females; whether this partially accounts for the relation between gender and depression; and whether manipulating body dissatisfaction will impact dieting and bulimic pathology.

ORWH is supporting a project on weight gain in pregnancy with the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). This project focuses on primary prevention of obesity in women by slowing the accumulation of weight in the childbearing years. The study encourages women to only gain an amount of weight during pregnancy that is within the appropriate ranges recommended by the Institute of Medicine and primarily targets lower income, rural white women who enter pregnancy with normal or high body mass indices. Also

with NIDDK, ORWH is supporting a study to examine the effect of a mentor-based intervention on long-term weight loss in overweight adult women.

ORWH, with the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), is funding an epidemiologic study to evaluate the potential role of environmental chemicals in the development of lupus nephritis and to elucidate how these exposures might influence the racial and gender disparity seen in lupus.

A two-phase study co-sponsored with the National Institute on Alcohol Abuse and Alcoholism (NIAAA) examines the relationship of violence and alcohol in the lives of Native American women. The study also is designing culturally relevant instruments for subsequent research, and will produce findings that can serve as the basis for culturally-appropriate preventive interventions.

ORWH provides funds to assist the National Institute on Aging (NIA) in supporting an important study for women, the Study of Women's Health Across Nation II (SWAN II). SWAN consists of both cross sectional and longitudinal studies on the natural history of menopause and a characterization of endocrinology/physiology of pre-menopause among five ethnic groups - Caucasian, African American, Hispanic, Chinese, and Japanese. The SWAN study is providing new and exciting information that can help predict which factors contribute to disease sequelae or poor health in women after menopause.

NIH has made healthy living and prevention of chronic disorders a major priority for stimulating future research on women's health. This research priority includes:

- § the impact of diet, nutrition, hormones, exercise and weight patterns;
- § the emerging epidemic of obesity and eating disorders including basic mechanistic studies and strategies for prevention;
- § the impact of addictive behaviors such as tobacco, alcohol, illicit and licit drugs; and
- § tobacco and alcohol use and associated health effects, including developing and expanding scientific and behavioral investigations to address and eradicate tobacco use and other tobacco -associated health effects, including cancers of the head, neck and cervix with a focus on the potentiating effects of alcohol.

ORWH is collaborating with the ICs and the scientific community to encourage and enhance research in these and other topical areas which can help in the prevention of disease. Future directions for new research also include the role of sex/gender differences in the neurobiological and psychological consequences (including drug abuse) of early trauma, physical and sexual assault, and elder abuse. In the care-giving and health related quality of life arena, the development and evaluation of effective strategies to improve the health-related quality of life for women and their families as well as the examination of stress and coping styles in women with multiple competing societal roles will be given priority.

Office of AIDS Research

The National Institutes of Health supports a comprehensive AIDS Research Program in which health promotion and disease prevention is a significant emphasis. NIH has developed an HIV Prevention Science Agenda that includes and combines biomedical, behavioral, and social approaches to better understand factors affecting HIV-related risk and protection and to develop effective strategies for promoting healthy behaviors and optimizing the health status of both HIV-infected and HIV-uninfected people.

A primary goal of NIH sponsored AIDS-related behavioral, social, and prevention science research is to discover how to change the behaviors that lead to HIV transmission – including preventing their initiation – and how to maintain protective behaviors once they are adopted. An additional goal, which also relates to our health promotion research efforts, is to reduce the negative impact of HIV on individuals with HIV infection, on their families, on the health care system, and on society. Both of these goals involve developing and disseminating effective tools and technologies for HIV prevention and care, such as behavioral interventions, vaccines, microbicides, and antiretroviral therapies.

Current research priorities within the NIH AIDS Research Program reflect a number of recent and significant developments. First, there has been a notable shift in the demographics of the HIV/AIDS epidemic in the United States over the past decade. An increasing proportion of new HIV and AIDS diagnoses is occurring among women, racial/ethnic minorities (principally African American and Latino/Hispanic), and people older than 50 years of age; and, increasingly, HIV is transmitted through heterosexual contact in the context of drug and alcohol use. These changes require the development and refinement of behavioral and social interventions that take into account the complex interplay of gender, age, cultural context, and HIV risk. The NIH AIDS Research Program is working to improve knowledge about how cultural beliefs and institutional arrangements contribute to access to and utilization of health promotion strategies, including prevention and care services. In addition, NIH is concerned with improving our knowledge on the relative effectiveness of individual behavioral-change interventions and community-based strategies that are designed to improve health promotion/disease prevention efforts.

Second, the development of new and more effective drug therapies – in particular, combination therapies – for combating HIV infection has raised a host of behavioral questions that have significant implications for HIV prevention and treatment. With combination therapies, the number of drugs and frequency of dosing require strict adherence to regimens that may be difficult for many people to achieve. Lack of complete adherence may result in the development of resistant strains of HIV, which could have devastating effects on our ability to stem transmission and treat HIV-infected individuals. In addition, as HIV-infected individuals experience improved health and a decline in detectable virus in their bodies as a result of taking the new combination therapies, they may believe they are less infectious and may lapse into unsafe sexual and drug-using behaviors. This could have the effect of increasing HIV transmission, if the virus is still viable at undetectable levels. These issues highlight the

importance of research on how best to ensure adherence to both pharmacological and behavioral HIV-related interventions, as well as research on the sustainability of health promotion/HIV prevention efforts over time. It is essential to improve knowledge about how best to provide individual and community support for health promotion/primary HIV prevention efforts among HIV-infected individuals and how best to ensure societal commitment to health promotion/HIV prevention for the duration of the epidemic.

A third important recent development is the recognition that large-scale HIV-related health promotion/disease prevention strategies adopted by national and local governments have been effective in reducing transmission in many countries and cities. Policy changes related to promoting access to and utilization of known HIV-related health promotion/disease prevention measures, including condoms, sterile injection equipment, and delaying or abstaining from sexual intercourse, have resulted in documented declines in HIV incidence, even in settings with high seroprevalence rates. Given this, the NIH recognizes the need for further study into the impact of economic, legal, and policy changes on stemming the AIDS epidemic through behavioral and social change. Further, NIH is working to address the urgency of widely disseminating efficacious, science-based HIV-related health promotion/disease prevention interventions for the maximum impact on public health. Concurrent with this dissemination, the NIH is working to identify and address cultural, ethical, and logistical issues (e.g., infrastructure-building, cost, training) that arise in replicating and/or adapting interventions with different populations and in different settings.

In summary, the NIH AIDS Research Program supports HIV-related health promotion/disease prevention research through a comprehensive scientific agenda. Major components of this program include: (1) supporting basic research to strengthen understanding of the determinants, processes, and cultural and contextual issues influencing HIV-related risk and protection; and, (2) developing, evaluating, and diffusing effective behavioral, social, and biomedical interventions to promote health and to prevent the transmission, acquisition, and negative consequences of HIV infection and AIDS.

Office of Dietary Supplements

The Office of Dietary Supplements (ODS) was created at the National Institutes of Health by the Dietary Supplements Health and Education Act (DSHEA) of 1994. This legislation identified two broad functions for the ODS: 1) "...explore more fully the potential role of dietary supplements as a significant part of the efforts on the United States to improve health care..." and 2) "...promote scientific study of the benefits of dietary supplements in maintaining health and preventing chronic disease and other health-related conditions."

In the seven years since DSHEA was passed, Americans have taken up supplements as part of their health care and wellness with increasing enthusiasm, at least until recently. Sales of dietary supplement products rose from \$4 billion in 1994 to \$15 billion in 1999, and it has been estimated that more than 50% of the U.S. population takes supplements. There are signs, however, of a slowdown in the rate of growth of this category of products. In part, this appears

to be due to increasing concerns on the part of consumers about three rather important aspects of the products: quality, concerns about safety, and some mistrust about efficacy claims. While these concerns are not universal and do not implicate all dietary supplement products, they have raised important questions for consumers that the ODS has been involved in assessing since its inception.

The ODS believes that consumers need to have access to quality information about both the risks and the benefits of dietary supplements in health promotion. ODS meets its mandate in three general ways: by supporting research, by developing databases, and by providing information.

In terms of research support, the ODS has targeted several areas for investment of its resources:

- Population-based research into dietary supplement use and behaviors that influence use;
- Multidisciplinary approach to the basic and clinical science of dietary supplement ingredients;
- Evidence-based evaluation of dietary supplement efficacy and safety;
- Training and career development in dietary supplement research; and
- Support of conferences and workshops in conjunction with NIH ICs, as well as with outside organizations, to help guide the development of an appropriate research agenda.

In terms of database support and information resources, the ODS has several efforts:

- International Bibliographic Information about Dietary Supplements (IBIDS), a repository of current international literature developed in conjunction with the National Agricultural Library of the USDA; and
- Computer Access to Research in Dietary Supplements (CARDS), a database of federally-funded research (currently under development);
- Fact sheets about dietary supplements;
- Development of curriculum in University undergraduate, graduate, and medical schools;
- Speakers for academic, lay, and trade-based audiences;
- Information to stakeholders (e.g., the public, press, Congress, etc.); and
- An up-to-date website (<http://dietary-supplements.info.nih.gov/>) to inform audiences about ODS activities and new developments.

Office of Science Policy - Office of Science Education

In collaboration with the 27 Institutes and Centers (ICs) that comprise the NIH, the Office of Science Education (OSE), Office of Science Policy, Office of the Director, began a major trans-NIH health promotion and science literacy initiative in 1997. This OSE-sponsored initiative involves the development and free distribution of medical science-based curriculum supplements to K-12 teachers and school administrators nationally. Each curriculum supplement is consistent with the National Science Education Standards and includes cutting-edge science, inquiry-based activities, and up-to-date medical research findings that are translated into real-world scenarios. Curriculum supplement activities are specifically designed to promote critical thinking skills and facilitate student understanding of medical science that will ultimately lead to improved health

and the ability to make well-informed decisions about preventive, diagnostic, and therapeutic health care practices and procedures. For example, OSE and the National Institute of Dental and Craniofacial Research recently completed a first- and second-grade curriculum supplement unit entitled *Open Wide and Trek Inside* to promote student understanding of the oral environment and emphasize specific actions that students can take to promote good oral health.

NATIONAL INSTITUTE ON AGING

Since its inception in 1974, the National Institute on Aging (NIA) has supported biomedical, behavioral, and social research with the goal of improving the health and well-being of our nation's older population. A major focus of the NIA extramural and intramural research programs is to identify interventions to delay or prevent diseases and disabling conditions that were once thought to be a normal part of the aging process. These interventions hold the promise of improving the quality as well as the length of life for older Americans. The NIA is currently supporting a variety of health promotion programs and activities.

Biology of Aging Program. The Biology of Aging program (BAP) supports and promotes research on the biochemical, genetic, and physiological mechanisms of aging and the onset of age-related disease. Examples of health promotion research activities within the BAP portfolio include the work being done by investigators who are looking at the effects of caloric restriction on increasing the healthy life span of simple organisms and its implications for humans. Other researchers are studying the human immune system and how it can be enhanced to fight the onset of diseases commonly associated with old age. Research on improved nutrition, including studies of dietary protein requirements of elderly men and women is another area of interest BAP-supported researchers are pursuing. An innovative program in San Antonio, Texas, "Positively Aging," is teaching middle-school students about the aging process and how they can make critical health behavior and lifestyle decisions for extending and enhancing their own lives.

Neuroscience and Neuropsychology of Aging Program. Through the Neuroscience and Neuropsychology of Aging (NNA) Program, NIA supports and promotes research on the structure and function of the aging nervous system and leads the Institute's efforts on Alzheimer's disease (AD) research. The NNA supports research to improve our understanding of what interventions may be effective in preventing the onset of AD. In a variety of ongoing clinical trials, researchers are testing the effects of agents, such as vitamin E, anti-inflammatory drugs, and estrogen, on preventing the onset of AD and on maintaining and enhancing cognitive function in the normal aging brain. Investigators are also studying what genetic and non-genetic risk factors may play a role in the development of AD, including protective factors such as education and enhanced environments. Through the Alzheimer's Disease Research Centers, which supports basic, behavioral and clinical research activities related to AD, researchers are developing and testing interventions for alleviating caregiver burden, improving patient care and promoting the health of individuals in these vulnerable populations.

Behavioral and Social Research Program. The Behavioral and Social Research Program (BSR) supports and promotes research on the behavioral changes related to aging and the impact of older people on society. BSR-supported researchers are not only interested in developing effective strategies for promoting good health in older people, but also want to understand how to motivate older people to engage in healthy behaviors and avoid unhealthy or high-risk behaviors (i.e. physical inactivity, poor nutrition, tobacco and alcohol use). Researchers also want to understand the extent to which an individual's environment (i.e. family relationships, social support, community infrastructure) will inhibit or enhance one's ability to adopt healthy behaviors. The Health and Retirement Survey, which BSR supports, is also providing critical information about how socio-economic status and lifestyle can influence an individual's health status. Many researchers supported by the BSR program are trying to understand the recently observed disability decline in older people in the United States. The goal is to more fully understand which factors are responsible for this optimistic trend so it can be accelerated in future years. In addition, researchers are investigating specific interventions to improve memory, reasoning, and processing speed in older adults to determine if they can maintain or even enhance cognitive function over time.

Geriatrics Program. The NIA Geriatrics Program (GP) supports and promotes research on age-related diseases, degenerative conditions, and disabilities. Through its support of programs, such as the Older Americans Independence Centers program, the GP is encouraging the development of strategies to prevent falls and fractures and of treatments for conditions such as cardiovascular disease, osteoporosis, and incontinence. GP-supported researchers have reported critical findings related to exercise and its positive effects on older people. Many of these advances have been translated into a campaign NIA supports to encourage older people to exercise. Through the GP, NIA is supporting the Study of Women Across the Nation (SWAN), a nationwide longitudinal study that is characterizing the natural history of menopause in ethnically diverse populations of women. One of the study's key objectives is to identify strategies for promoting good health in pre-, peri-, and post-menopausal women with an emphasis on management and prevention of menopause-related pathology.

Intramural Research Program. The NIA Intramural Research Program (IRP) is a broad-based multidisciplinary unit that targets the linkage of basic disease mechanisms, risk factors and outcomes, including the potential for reversal, as a basis for health promotion. The IRP Laboratory of Cardiovascular Science, for example, has defined vascular stiffness as a predominant mechanism underlying subsequent cardiovascular disease and developed therapeutic interventions to prevent it that are just entering clinical testing. The Laboratory of Clinical Investigation conducts studies that target health promotion in the maintenance of physical function and treatment and prevention of type II diabetes and osteoarthritis. The studies of the Laboratory of Epidemiology, Demography, and Biometry have emphasized an understanding of the primary risk factors for physical disability including the effects of muscle and fat relationships on physical functioning. The intent is to identify measures of strength and/or exercise as possible preventive variables.

Communication Activities. The NIA Office of Communications and Public Liaison develops publications to translate the results of research into materials that the public can use. To promote the health of older people, the Office has developed a variety of “Age Pages,” short pamphlets on diseases and conditions affecting the elderly. A new interactive age page is being developed to enhance the delivery of this information via the World Wide Web. The Office also published a comprehensive guide on exercise and translated it into a video. These items have become the cornerstone of the Institute’s campaign to promote healthy aging by encouraging older people to exercise. Information on resource materials available from NIA can be accessed on-line at <http://www.nia.nih.gov>.

NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM

Health Promotion Research

Preventing Fetal Alcohol Syndrome (FAS) and Other Alcohol-related Birth Defects. Over the past two years, NIAAA has dramatically increased funding for studies to develop and test interventions that have the potential for preventing FAS and related defects. In the majority of studies, the preventive intervention involves various forms of motivational enhancement to encourage pregnant high-risk women to refrain from alcohol consumption. This type of counseling approach has previously proven to be effective in addressing high-risk drinking among college students and patients of primary-care physicians. Ongoing research is also focusing on the effects of physician advice to pregnant women; effects of alcohol tax and availability policies; point-of-purchase warning signs about the hazards of drinking; and mandated warning labels on containers of beverage alcohol. NIAAA continues to fund a large community-based trial of comprehensive interventions to prevent FAS among four American Indian tribes.

Racial/Ethnic Health Disparities in Alcohol-related Problems and their Prevention. Studies have revealed that the prevalence and severity of alcohol-related problems vary across the major minority groups (African Americans, Native Americans, Alaska Natives, Hispanic Americans, Asian Americans, and Pacific Islanders), frequently indicating more severe problems than Caucasian patterns show (e.g., FAS rates among the Plains Indians) and sometimes indicating healthier patterns (e.g., relatively low drinking rates among African American adolescents). Within any given minority group, alcohol-related problems also vary by age, gender, locality, and problem area, so generalizations must be made cautiously. It is clear, however, that particular ethnic groups and subgroups are at excess risk of morbidity and mortality from specific types of alcohol problems. NIAAA has invested heavily in pre-intervention research that examines the prevalence and etiology of alcohol-related problems among racial and ethnic minorities.

NIAAA is continuing to fund a large number of pre-intervention studies that examine risk and protective factors as well as environmental, social, economic, cultural, and psychological processes that contribute to alcohol-related problems among minority groups. The Institute also is supporting a study of interventions using a social marketing approach to prevent high-risk

drinking and related problems among college students is being conducted at the State University of California at San Diego where a high proportion of the students are Hispanic. The intervention emphasizes the importance of constraints on the availability of alcohol and enforcement of existing laws and policies concerning underage drinking and drinking and driving. These strategies proved to be effective in a prior community-based study involving medium-sized cities with sizable minority populations, but the targeting of high-risk neighborhoods is a new innovation.

Preventing DUI Recidivism. NIAAA and the National Highway Traffic Safety Administration (NHTSA) are jointly supporting a program to fund five ongoing studies on “The Effectiveness of Strategies For Preventing Driving Under the Influence (DUI) Recidivism” to understand the problem of recidivism among people convicted of drinking and driving offenses. Despite marked decreases in alcohol-related fatalities and in alcohol-impaired driving in the past 15 years among the U.S. driving population, much remains to be learned about the relative effectiveness of specific sanctions, singly and in combination, for DUI violators. Of particular concern is building a firmer knowledge base to assist judges, prosecutors, and policymakers in making choices among the various options available to them in sanctioning DUI offenders. Examples of types of studies underway include: 1) the use of motivational interviewing strategies focusing on decreasing future harm related to alcohol and drug use among DUI offenders. Individuals will be assessed for the effects of alcohol advertising and for their motivation to make a change in their use of alcohol; 2) Implementation and assessment of a drug court model to address the high rates of recidivism among multiple DUI offenders. This model combines assessment and rapid entry into substance abuse treatment, with court supervision of abstinence and treatment compliance. Criminal, driving, and other official records are being used to evaluate whether the DUI court is associated with lower rates of arrest at follow-up, fewer incidents of intoxicated driving, self-reports of less abusive drinking patterns, and a more advantageous cost-benefit ratio from the standpoint of the criminal justice system; and 3) Examination of the effects of a court-mandated program to determine whether the ignition interlock is effective in reducing recidivism when it is forced onto the vehicle of unmotivated DUI offenders. Researchers will also test whether a motivational intervention program and tailored group support can reduce drinking and driving that occurs after interlock removal.

Abusive Drinking on College Campuses. NIAAA currently supports 19 prevention research grants and two Small Business Innovative Research grants that focus on alcohol problems among college students. A recent survey indicates that as many as 42% of male college students have drunk more than five drinks (four for women) consecutively in the previous two weeks, and 21% had done so on three or more occasions in that time period. Most completed research has focused on interventions that are directed toward the knowledge, attitudes, and behaviors of individuals regarding alcohol and its effects. These studies indicate that: simple education programs do not work alone in the absence of other interventions; motivational enhancement with personal feedback and skills training is effective for high-risk drinkers; alcohol expectancies play an important role in drinking practices; and interventions that change expectancies can reduce drinking.

Evidence also indicated that college drinking occurs within a context of strong pro-drinking social norms. Over the past two years, an NIAAA National Advisory Council Subcommittee on College Drinking has supported two panels of experts to review the existing evidence on the “Contexts and Consequences of College Drinking and the Prevention and Treatment of College Alcohol Problems.” The subcommittee includes college presidents and researchers. Their final report will represent the unique perspective of administrators who must deal with practical day-to-day consequences of campus alcohol misuse and the challenges involved in curbing such behavior. Report recommendations will be actively disseminated to college presidents, administrators, student advocates, parents, and community members, and NIAAA will develop new initiatives to address identified research needs.

Preventing Drinking by Young Adolescents. Research has consistently identified family factors as having an important influence on drinking by youth, especially for young adolescents and preteens. NIAAA has four ongoing studies of preventive interventions that are family-based or involve a family component: a family intervention for children of alcoholics in two urban areas; an intervention for rural African American families; a multi-component intervention in a large urban area for high-risk youth; and a media-based intervention that includes messages directed at parents as well as at children. Many of these studies have intervention components that include enhanced parent-child communication, definitive rules and expectations regarding alcohol, and close monitoring of children’s behavior.

NIAAA also supports several studies on the impact of a combination of school/family/community-based interventions to prevent or delay the initiation of drinking by adolescents. Ongoing studies include: family interventions among rural and urban African American youth; after-school programs among disadvantaged urban youth; alcohol-focused social movements in a variety of minority communities; and a host of strategies to prevent alcohol-related HIV/AIDS among high-risk groups.

The NIAAA recently published a guide for parents of young adolescents, “You Can Make A Difference: Talk to Your Child About Alcohol,” that provides research-based guidance on how to reduce children’s risk for early drinking.

Effects of Alcohol Advertising on Problem Drinking and its Consequences. NIAAA is collaborating with the Substance Abuse and Mental Health Services Administration’s (SAMHSA) Center for Substance Abuse Prevention, to fund three studies on the “Effects of Alcohol Advertising on Underage Drinking” to determine whether alcohol advertising affects initiation and continuation of alcohol consumption by youth. Each study is exploring causal relationships among exposure to advertising, alcohol use by youth, alcohol expectancies, and other potential mediators and moderators (e.g., personality and family norms. In addition, these studies are measuring the relative magnitude and nature of advertising effects on actual drinking behavior, as well as filling gaps in knowledge regarding the mediating role of expectancy formation on possible associations between alcohol advertising exposure and alcohol consumption.

Health Education and Outreach

Brain Awareness Exhibit. NIAAA has created a multisensory exhibit to demonstrate to preteens and adolescents how acute and chronic alcohol exposure affects brain cell functioning. “The Drunken Brain” uses a four-foot brain model constructed from chicken wire and Christmas lights. Students can simulate experiments where they attempt to navigate an obstacle course while wearing Fatal Vision prism goggles and dribble a basketball with and without prism goggles. Students can observe firsthand the diminished motor performance experienced during alcohol intoxication.

National Alcohol Screening Day and Community Workshops. For three years during Alcohol Awareness Month in April, NIAAA has organized National Alcohol Screening Day in collaboration with the nonprofit organization Screening for Mental Health, Inc. and the Substance Abuse and Mental Health Services Administration (SAMHSA). This screening day is a national outreach program sponsored by community-based health-related organizations and is designed to educate people about alcohol disorders, screen them for a range of problems, and refer those individuals in need of treatment resources. Last year, an estimated 52,000 people attended screening events at over 1100 community and college screening sites nationwide. In collaboration with community groups such as the Community Anti-Drug Coalitions of America, NIAAA also sponsors workshops to expand the reach and effectiveness of alcohol screening and worksite alcohol prevention.

Collaboration with Schools of Social Work. NIAAA has brought together faculty from schools of social work throughout the U.S. to develop a model curriculum and faculty training course in prevention and treatment of alcohol-use disorders. This group will write twelve modules that will provide research-based knowledge on alcohol to social work masters programs and graduate social workers worldwide. The curriculum will be co-published by the Council of Social Work Education and the National Association of Social Workers.

NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

The National Institute of Allergy and Infectious Diseases (NIAID) conducts and supports a broad range of basic and clinical research aimed at health promotion and disease prevention. As part of this effort, NIAID supports research on factors underlying disease, including genetic and environmental factors, that contribute to disease onset and progression. In addition, the Institute supports research programs that integrate behavioral interventions with biomedical interventions in order to alter behaviors to prevent exposure, promote healthy behaviors leading to early diagnosis, and improve adherence to treatment regimens. To ensure that the benefits of NIAID research reach as many people as possible, NIAID also supports active communications and outreach activities.

The NIAID portfolio of research on health promotion and disease prevention addresses both immune-mediated diseases/disorders and infectious diseases. In the areas of infectious diseases and HIV/AIDS, the focus is on blocking transmission, identifying and treating cases, and interrupting progression of disease. An example of one such program is the HIV Prevention Trials Network, an international multicenter network, conducts trials on several interventions including topical microbicides that have the potential to prevent transmission of HIV and other sexually transmitted diseases (STDs), and modalities to decrease mother-to-infant transmission of HIV. For the immune-mediated diseases, which include chronic diseases such as asthma and allergic diseases, autoimmune diseases, primary immunodeficiency diseases, and chronic inflammatory diseases, NIAID's prevention and health promotion research is focused in several areas described below.

Genetic Factors and Disease. The identification of genetic factors that either cause disease or predispose individuals to disease is key to prevention and health promotion. The primary immunodeficiency diseases are one group of immune-mediated diseases that are caused by genetic factors (*i.e.*, genetic defects). A main goal of NIAID's research on these diseases is to expand the medical genetics knowledge base in order to improve diagnosis, and facilitate genetic counseling and decision-making for affected individuals. For other immune-mediated diseases, inherited genes may contribute to the susceptibility for developing disease. For example, certain autoimmune diseases have been linked to a group of genes called the major histocompatibility complex (MHC) genes, known to be important in controlling immune responses. NIAID, in collaboration with other NIH institutes and private foundations, is pursuing research on the role of the MHC genes, as well as other genes, in autoimmune diseases through participation in several research consortia, including the North American Rheumatoid Arthritis Consortium, the Multiple Autoimmune Diseases Genetics Consortium, and the International Histocompatibility Working Group.

Environmental Factors and Disease. Another focus of NIAID's prevention and health promotion research in immune-mediated diseases is identifying environmental exposures that trigger or exacerbate disease. Perhaps the best example of NIAID's work in this area is the Inner-City Asthma Study. Initiated in 1991, this multi-site clinical research study identified multiple factors associated with asthma severity, especially among African American and Hispanic inner-city children. This study also implemented a comprehensive educational, behavioral, and environmental intervention program aimed at altering factors identified as major contributors to asthma severity. Specifically, the study demonstrated that a combination of cockroach allergy and exposure to high levels of cockroach allergen is a major risk factor for asthma severity in this population. It also demonstrated that the use of an asthma counselor in conjunction with indoor environmental controls substantially reduced asthma morbidity. Based on the success of this program, a renewal of the study was funded jointly by NIAID and the National Institute of Environmental Health Sciences in 1996. This study is evaluating an intervention that emphasizes cost-effective measures for improving the indoor environment and physician education. In addition, through support from the Environmental Protection Agency, an arm of the study is focusing on evaluating the effects of indoor and outdoor pollutants on asthma severity.

Following on the success of the initial study (1991-1996), NIAID, in collaboration with the Center for Disease Control and Prevention (CDC), recently launched a new program to disseminate and implement the successful counselor-based education intervention that reduced symptoms and hospitalizations in inner-city children with moderate to severe asthma.

Vaccines for Autoimmune Diseases. Another area of focus is on the development of vaccines to treat or prevent autoimmune diseases such as type 1 diabetes. While this area of research is relatively new, it holds great potential. To date, NIAID's research in this area has focused on the basic mechanisms of immune cell activation, development of new methods of immunization, and the extension of basic findings to clinical applications. To foster research in this area, NIAID recently established several Vaccine Immunology Research Centers devoted to advancing fundamental research relevant to the design and development of such vaccines.

Infectious Agents and Chronic Diseases. Yet another of focus in NIAID's prevention and health promotion research portfolio is the identification, prevention, and treatment of infectious agents as causative factors in chronic diseases. Over the past several years, scientists have demonstrated that infectious agents can cause diseases such as Lyme arthritis (*Borrelia burgdorferi*), cervical cancer (human papillomavirus), and liver cancer (hepatitis B/C virus). Further, mounting evidence indicates that infectious agents may be the underlying causes of coronary artery disease, diabetes, multiple sclerosis, autism, and chronic lung diseases. NIAID continues to investigate potential infectious causes or contributors to chronic diseases as identification of such agents will improve clinical diagnosis and treatment of these debilitating conditions and provide opportunities to prevent many diseases.

NIAID Outreach Activities. Outreach activities are an important component of NIAID's efforts to increase disease prevention and foster health promotion. These activities disseminate health-related materials and information as well as research results to the general public and health professionals. The activities include producing and disseminating print and audio-visual materials, exhibiting at professional and community meetings, sponsoring workshops and conferences for health care providers and the public, and supporting demonstration and education research projects.

NIAID produces materials, including prevention and health promotion information, on topics ranging from asthma, allergic and other immunologic diseases to HIV/AIDS and other sexually transmitted diseases. These materials are distributed to callers who request information as well as to people who write for copies of pamphlets. In addition, some of these materials, for example the "How to Help Yourself/Ayudate" series of eight book on HIV/ AIDS, are distributed in Spanish to inner-city clinics, community health centers, and community-based organizations serving minority populations. Many of the Institute's materials are also available on the NIAID web site: <http://www.niaid.nih.gov>.

NATIONAL INSTITUTE OF ARTHRITIS AND MUSCULOSKELETAL AND SKIN DISEASES

Arthritis and musculoskeletal conditions are among the most common health problems in the United States. More than 40 million adults are currently affected and this figure is projected to reach 60 million by the year 2020 with the 'graying' of our population. In addition, an estimated one in three Americans has a skin condition serious enough to warrant a visit to a physician. There are marked differences in the incidence, severity, quality of care, and outcome in a number of rheumatic, musculoskeletal, and skin conditions that have been observed in populations defined by gender, race, or socioeconomic circumstance.

The National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) is currently developing effective and innovative health promotion and disease prevention activities to reduce the onset, progression, and disability of arthritis, musculoskeletal, and skin diseases, particularly in populations at risk for these very common conditions. While recognizing that risk factors for these disorders are varied - they range from environmental exposures to behavioral and social characteristics - and that they are potentially difficult to address in their entirety, a number of activities have been mounted, including initiatives to enhance manpower. NIAMS has recently increased emphasis on health promotion and disease prevention by sponsoring a number of scientific meetings. For example, in December of 2000, the NIAMS held a scientific conference on health disparities in arthritis, musculoskeletal, and skin diseases to encourage new research activities and identify new intervention opportunities. Recent research workshop topics have included "Women's Health in Sports and Exercise" and "Risks and Benefits of Exposure To Ultraviolet Light."

Health Promotion Research. The NIAMS Extramural Research Program supports a number of projects related to health promotion and disease prevention. These include a NIAMS-funded longitudinal study that is testing two approaches for promoting exercise and healthy dietary practices in groups of fire fighters. The nature of the population will allow for both individualized and group interventions.

NIAMS is also supporting an innovative behavioral and educational intervention designed to decrease modifiable risk factors for osteoporosis in at-risk preadolescent girls. Girl Scout troops are receiving either a behavioral and educational intervention or education only. The intervention group receives interactive sessions using various media to present instructional material on osteoporosis and its prevention; incentives (e.g., jump ropes and a booklet of jump rope games) are provided; and self-monitoring of calcium intake and weight-bearing activity is used to reinforce healthy behaviors. The group of girls targeted is ideal for this intervention, since they are at a stage of rapid accrual of bone mass. It is hoped that the intervention will maximize their opportunity for attaining peak bone mass, thus serving to further the ultimate goal of osteoporosis prevention.

Significant loss of bone mass develops during childhood or adolescence in 40% of juvenile arthritis patients. There have been neither accepted treatments nor controlled trials addressing

osteopenia (low bone mass) in these patients. NIAMS is supporting the first longitudinal observational study of bone mineralization in patients with juvenile rheumatoid arthritis, which will increase our understanding of the natural history of osteopenia. This study is also testing the effects of calcium and vitamin D supplementation on bone mineralization, and will identify characteristics of patients with poor response to supplementation, pointing to directions for future research.

The effect of ethnicity on outcome in systemic sclerosis is not well understood. The NIAMS is supporting research in a cohort of Caucasians, Hispanics, and African Americans to investigate genetic, socioeconomic, demographic, and behavioral factors in systemic sclerosis, a disease that can result in outcomes such as pulmonary fibrosis, renal disease, heart disease, gastrointestinal disorders, disability, and death. This study should help identify factors to target for modification to improve disease course, and will result in our ability to identify high-risk patients who would benefit from earlier and more aggressive therapy, which may ultimately improve the prognosis of this disease.

Several studies confirm that lower extremity weakness is associated with osteoarthritis (OA) - or degenerative joint disease - of the knee, but it has not been clear whether the weakness precedes the development of OA or is a result of the disease. Currently, NIAMS is supporting a study that suggests that strength training may improve the prognosis in those with mild OA, decreasing both long-term pain and disability. In addition, NIAMS, together with other components of the NIH, is currently sponsoring a new funding opportunity for the prevention of onset, progression, and disability of OA.

Community Education and Outreach. The NIAMS Intramural Research Program has recently established the Health Partnership Program (HPP), a model community-based initiative to reduce health disparities in rheumatic, musculoskeletal, and skin diseases among minority communities. The HPP concentrates on four key areas to address the multiple factors contributing to health disparities: public health education, patient care, access to clinical investigations, and recruitment to research careers. The Institute is establishing a community health center in Washington, D.C., to provide diagnosis, treatment, and education programs for people with arthritis, lupus, and other rheumatic diseases. The Center will serve as a training site for NIAMS researchers and allow us to better understand how rheumatic diseases progress in minority populations. Collaborations with community-based organizations, including local government agencies, faith-based organizations, universities, civic groups and senior centers, enable us to assess community needs and design program plans accordingly. Current program activities include presentations on rheumatic diseases and careers in science, as well as exhibits at health fairs and seminars.

NATIONAL CANCER INSTITUTE

Progress in reducing the cancer burden could be greatly accelerated if evidence of effective prevention, early detection, and treatment interventions were systematically disseminated and diffused to those communities that need them most. The National Cancer Institute's (NCI)

Division of Cancer Control and Population Sciences (DCCPS) supports and evaluates a comprehensive program of behavioral research ranging from basic biobehavioral research to research on the development, testing and dissemination of disease prevention and health promotion interventions in areas such as tobacco use, dietary behavior, sun protection and cancer screening. The goal is to increase the breadth, depth and quality of cancer prevention and control behavioral science to ultimately reduce risk, incidence, and deaths from cancer as well as enhance the quality of life for cancer survivors. DCCPS supports research at the basic biobehavioral level to explain basic mechanisms and to help investigators develop more effective interventions. The NCI provides the infrastructure for more refined intervention research to increase the arsenal of evidence-based interventions, especially those that are effective for children, minority and underserved populations. It also supports research initiatives to learn how to best disseminate evidence-based interventions. The NCI Office of Communications supports NCI's mission by providing a comprehensive, integrated, and technology-supported communication capability, ensuring rapid, accurate, and consistent communication with all of its functional elements and with all constituencies NCI serves.

NCI is committed to reducing gaps in all aspects of health promotion and disease prevention research. Through several priority areas for investment -- Cancer Communications, Tobacco and Tobacco-Related Cancers, Genes and the Environment, Emerging Trends in Cancer, Health Disparities, and Quality of Cancer Care -- NCI hopes to build on the research foundation to resolve fundamental questions about cancer and improve cancer prevention, detection, diagnosis, and treatment. <http://plan2002.cancer.gov>

Through these scientific priorities and other initiatives, NCI is committed to the development of more culturally appropriate assessment instruments and integrated approaches that transcend topic areas, e.g., how to help people change multiple risk behaviors. Highlighted below are selected initiatives in tobacco use and prevention, diet, weight, and physical activity, and cancer communications. Ultimately, these efforts should reduce the cancer burden.

Examples of Ongoing Efforts

Transdisciplinary Tobacco Use Research Centers. The first year of funding for the Transdisciplinary Tobacco Use Research Centers (TTURCs) is completed. Seven academic institutions were awarded 5-year grants by the National Cancer Institute (NCI) and the National Institute on Drug Abuse (NIDA) to create these centers. Additionally, The Robert Wood Johnson Foundation (RWJF) committed additional funding over five years to improve the policy understanding and communications practices of the tobacco research teams. This collaborative effort among public and private institutions will increase our understanding of tobacco use and addiction and accelerate the development of innovative tobacco control interventions to benefit people. Researchers are studying a range of issues from biological and behavioral factors concerning determinants and treatment of tobacco use and nicotine addiction to prevention of tobacco use among youth of diverse cultures. RWJF participation provides an opportunity to enhance collaborations among scientists within and between the centers, and to speed the transfer of knowledge and interventions to communities across the nation.

Youth Tobacco Research. Recent discoveries have important implications for public health and future research, and reveal the need to develop new assessment instruments to study tobacco use in young populations, as well as prevention and early cessation and treatment intervention programs. Traditionally, researchers studying tobacco prevention and cessation for children and youth in the U.S. used adult models adapted for youth, assuming that models that worked with adults would work equally well when applied to a young population. The model for the development of nicotine dependence is the progression from experimental tobacco use in youth, to occasional use to daily use, to increasing heavy daily use subsequently resulting in dependence. This process can take several months to years. Research funded by NCI has found that the pattern of nicotine dependence among youth does not parallel the model developed for adults. Contrary to past assumptions, adolescents who have never smoked daily may encounter significant difficulty in their attempt to quit smoking. In order to assess adolescent tobacco cessation programs and inform future activities and research, NCI has formed collaborative partnerships with other NIH institutes and centers, the Centers for Disease Control and Prevention, the Robert Wood Johnson Foundation, and the American Cancer Society.

5 A Day Program/Health Promotion Activities. Behavioral researchers in nine academic sites collaborated with the NCI to publish detailed evaluations from the 5 A Day community research projects. Each project showed significant, positive results in increasing fruit and vegetable consumption in the targeted audiences. The NCI and the ACS are collaborating to disseminate and evaluate a successful church-based nutrition education program for African-Americans, a group at increased risk for most cancers. In addition, NCI co-sponsored with the NIH Office of Behavioral and Social Sciences Research an RFA focusing on innovative approaches to disease prevention through behavior change. The behaviors of interest include tobacco use, exercise, diet, and alcohol abuse. Since 1991, the 5 A Day for Better Health Program has raised public awareness about the importance of eating 5 or more fruits and vegetables a day to help reduce the risk of cancer. NCI is in charge of the national media campaign, which concentrates on achieving message penetration in multiple media channels simultaneously. Consumers can see the 5 A Day message consistently not just in newspapers, magazines, and on the radio, but also on www.5aday.gov and most significantly, on the local television news through the “Do Yourself a Flavor” news inserts. These 90 second television segments use chef Graham Kerr to enable behavior change by providing practical tips on easy ways to eat more fruits and vegetables. New segments air once or twice a week as part of local news shows and are now playing on more than 40 television stations nationwide. Additionally, NCI works with Graham Kerr to produce regular radio segments that also provide tips on adding more fruits and vegetables to the daily diet.

Cervical Cancer Education. NCI’s Cervical Cancer Education Program targets the American public and health professionals to increase awareness about the importance of regular Pap tests in the prevention of cervical cancer. NCI has designed, promoted, and distributed informational materials about cervical cancer prevention in English, Spanish, and most recently, Vietnamese. Our ongoing partnership with the Health Care Financing Administration has increased the reach of the program, focusing our efforts on women with the highest rates of cervical cancer and the lowest rates of Pap test screening. This includes women over the age of 65 and Vietnamese women. Our most recent activities include the promotion of an NCI study that found testing for

the human papillomavirus (HPV) can help doctors and patients decide what to do about mildly abnormal and common Pap test results and, the development of informational materials to assist health professionals in their cervical cancer prevention outreach with older women.

Breast Cancer and Mammography Education. NCI's National Breast Cancer and Mammography Education Program utilizes a variety of methods to raise awareness and educate patients and health providers about the importance of regular breast cancer screening, with special emphasis on women ages 65 and older due to their low screening rates and increased risk of breast cancer. Through a partnership with the Health Care Financing Administration several informational materials about breast cancer prevention have been developed. Tactics that are currently underway target both health providers and health consumers. The Program's outreach campaign for health providers aims to increase their awareness of NCI's mammography recommendations and to increase their referral of women for regular breast cancer screening. The Program's health consumer tactics aim to increase the number of women, particularly Medicare beneficiaries 65 and older, who are aware of the Medicare benefit and who are referred for regular breast cancer screenings. To achieve these goals, the Program includes a revision of a Mammography "prescription pad" tool that health providers distribute to their patients, and the adaptation of Asian language mammography brochures for national distribution.

New Initiatives in Cancer Communications

The goal of this investment is to increase knowledge about, tools for, access to, and use of cancer communications by the public, consumers, patients, survivors, and health professionals -- with a special focus on diverse populations -- to accelerate reductions in the U.S. cancer burden. We will partner with industry, especially the burgeoning Internet-based companies, and a variety of other organizations to develop innovative ways to increase access, especially for ethnic minorities and the poor. This extraordinary opportunity for investment allows us to harness the power of the revolution in informatics and to improve the transfer of new knowledge and informed decision-making in order to reduce the cancer burden. Initiatives include:

Centers of Excellence in Cancer Communications RFA. The Centers will facilitate rapid advances in knowledge about cancer communications and develop, implement, and evaluate strategies to improve access to and the efficacy, effectiveness, and dissemination of cancer communications. By assembling interdisciplinary teams of researchers committed to answering important health communications questions, and by ensuring adequate infrastructures, we can speed the process of discovery and its application.

Health Information National Trends Survey. The Health Information National Trends Survey is currently being designed to collect nationally representative data every two years about the American public's need for, access to, and use of cancer-related information. The survey will provide updated trends data regarding changing patterns, needs, and opportunities to inform all Americans about cancer prevention, screening, treatment, and support. Results will be made publicly available. This will be the largest and only public survey to examine people's information needs and experiences related to cancer.

NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

The National Institute of Child Health and Human Development (NICHD) focuses on the reproductive, physiological, and behavioral processes that determine, promote, and maintain the health of children, adults, families, and populations. The Institute administers a multidisciplinary program of research, research training, and public information dissemination that extends over the life span, from conception to maturity. Research supported and conducted by the NICHD encompasses a unique and broad scope of basic, clinical, and epidemiological studies, whose goals include strategies to prevent infant and child morbidity and mortality; and identifying and promoting the prerequisites of optimal physical, mental, and behavioral growth and development in infancy, childhood, adolescence, and adulthood.

Improving Maternal and Infant Health. The NICHD supports an extensive portfolio of research that is designed to ensure the birth of healthy babies and the opportunity for each infant to reach adulthood unimpaired by physical or mental disability and able to reach his or her full potential. Of relevance to improving birth outcomes are scientific efforts that focus on promoting 1) maternal health, healthy pregnancy and birth outcomes; 2) early nutrition, including breastfeeding, and infant growth; and 3) positive learning behaviors. The Institute also supports various studies that examine such topics as the impact of diabetes and hypertension on pregnancy, and the effects of stress, nutrition, tobacco use, physical exercise, and partner violence on pregnancy outcomes, with many studies targeting minority women. This and other studies contribute to better understanding what constitutes maternal well-being and how maternal morbidity and mortality can be reduced. An example of a targeted effort is an NICHD-supported initiative to reduce infant mortality in minority populations in the District of Columbia, which is co-funded with the National Center on Minority Health and Health Disparities.

Promoting Child Well-Being and Adolescent Health. The Institute's program in Behavioral Pediatrics and Health Promotion examines the critical role of behavior in relation to health, growth and development, from conception through early development. The program supports research to identify the basic biobehavioral mechanisms involved in health-risk taking behaviors and the prevention of such behaviors at all stages of development. During the past five years, the Institute has supported initiatives to prevent childhood and adolescent injuries, eating disorders, tobacco use in childhood and adolescence, and childhood and teen suicide. The NICHD also leads the way in support of biomedical and clinical studies to understand the neuroendocrine, nutritional, and other factors that occur during puberty and understand how these factors influence normal growth and development during the teenage years. For example, NICHD researchers are investigating the biological and physiological mechanisms that link exercise with growth and development during adolescence, taking into account diet, gender, and maturational status. In addition, the NICHD led support for the National Longitudinal Study of Adolescent Health, or Add Health Study. This landmark effort, with its current extension, should continue to provide researchers with the data needed to better understand the biologic and environmental factors that promote healthy transitions to adulthood. The NICHD also plans to expand its efforts in this area by supporting studies that identify risk and resiliency factors in middle

childhood. Other health promotion research includes specific intervention studies on ways to promote 1) physical activity in children; 2) learning and reading skills for all children, including those for whom English is not their primary language; 3) parenting practices; and 4) safe driving practices among teens.

The Institute also supports many other data collection efforts and longitudinal studies that examine national child health trends to inform policymakers, develop research agendas and develop interventions. Besides the Add Health study, the NICHD initiated the trans-federal annual report on *America's Children: Key National Indicators of Well-Being*. The NICHD also is working with other federal agencies and taking the lead in developing and conducting a new longitudinal study that will examine environmental, biological, and social factors and their impact on child health.

Promoting the Health of Families and Populations. The Institute's behavioral, social, and demographic studies include a focus on families, households and population groups; the determinants and consequences of immigration; and a long history of encouraging research on the health disparities of racial and ethnic groups. The results of such studies have implications for efforts to promote health and prevent disease in schools, workplace, families, communities, and among diverse populations. The Institute's Child Well-Being Research Network and the Science of Ecology of Early Development 2000 program promote policy-relevant research on families and children, particularly on the developmental outcomes for poor and minority children.

NICHD research on demography and health seeks to understand how changing social, economic, and demographic conditions affect health and health behavior. Studies are supported that identify social, behavioral, and environmental factors that contribute to racial and ethnic differences in infant health and point to the importance of social support and health-promoting behavior during pregnancy. Related immigration studies include a focus on the health and well-being of new immigrants and their children. Research on health and social problems indicates how broad social, economic, and cultural factors affect and are affected by the health of our population. The results of such research also inform the development of health promotion and disease prevention strategies for improving health.

Preventing Onset of Chronic Disease in Childhood. The NICHD supports research on early prevention, starting in childhood, of chronic diseases that occur later in life, including obesity, heart disease, diabetes, and osteoporosis. These chronic diseases have their roots in childhood, are diet and nutrition related, and are difficult to reverse in adulthood. In addition to research directed at the causes of obesity, NICHD funds research on behavioral modification and change and other innovative approaches to reverse obesity in childhood. The NICHD has supported a large initiative to study several thousand children in families that are susceptible to premature coronary artery disease and found several predictive markers for the disorder in childhood. The Institute also supports large research studies in preventing both type 1 (juvenile) diabetes and type 2 diabetes mellitus, and gestational diabetes mellitus. Efforts to support osteoporosis prevention research have been augmented by studies of the effect of dietary and behavioral interventions on bone mineral density in children.

Public Health Education and Communication Initiatives. To help in some of these above efforts, the NICHD currently sponsors two major public health information and promotion programs. The Milk Matters Campaign is a public education and communications effort designed to increase calcium consumption among children and teens to build strong and healthy bones. While the campaign encourages children and teens to consume a variety of calcium rich foods, emphasis is placed on drinking more low-fat and fat-free milk for optimal bone and human development. The Institute also supports The Sudden Infant Death Syndrome (SIDS) “Back to Sleep” National Public Health Education Campaign, which, since its launch in 1994, has resulted in a 38% relative decrease in the rate of SIDS. This campaign is directed at mothers and family members of young infants, the professionals responsible for their care, and the public in general. A related program is targeting the needs of African American families.

Research Training Related to Health Promotion. The Institute provides funds for training opportunities in injury prevention and health promotion, including the identification of childhood precursors of risk behaviors, eating and sleep disorders, interactions of health and behavior leading to academic failure, youth suicide, homicide, and antisocial behaviors. It also supports training programs that focus on health behavior research in minority children with chronic diseases.

NATIONAL INSTITUTE ON DEAFNESS AND OTHER COMMUNICATION DISORDERS

An estimated 28 million people in the United States are deaf or hard of hearing and more than 46 million people suffer some form of disordered communication. Deafness or hearing impairment can be caused by genetic factors, noise or trauma, sensitivity to certain drugs or medications, and viral or bacterial infections. The National Institute on Deafness and Other Communication Disorders (NIDCD) was established by Congress in 1988 to conduct and support biomedical and behavioral research and research training in the normal and disordered processes of hearing, balance, smell, taste, voice, speech, and language. The Institute also conducts and supports research and research training related to disease prevention and health promotion; addresses special biomedical and behavioral problems associated with people who have communication impairments or disorders; and supports efforts to create devices which substitute for lost and impaired sensory and communication function. NIDCD develops and disseminates disease prevention and health promotion, based upon scientific discovery, to the public.

WISE EARS! Exposure to harmful levels of sound causes damage to the sensitive hair cells of the inner ear that eventually affect the nerve of hearing. Damage can be done in several ways; for example, a traumatic and sudden level of impulse noise like such as an explosion, continuing exposure to high levels of sound in the workplace or in recreational settings, years of exposure causing subtle but progressive damage, or individual vulnerability to noise. Noise-induced hearing loss (NIHL) is related to noise level, proximity to the harmful sound, time of exposure, and individual susceptibility. While NIHL is not reversible, it is fully preventable. Ten million

Americans have already suffered irreversible damage from noise, and thirty million are exposed to dangerous levels of noise each day. Recent research shows that Americans are losing their hearing almost 20 years younger than would be expected. The greatest increase occurred for people 45-64 years old and men were found to be more frequently affected in the 35- to 60-year-old age group. Noise exposure appears to be the culprit.

The fact that many of these causes can be controlled by prevention, resulted in the development of WISE EARS!, a national health education campaign to prevent NIHL. The objectives of the campaign are: (1) to increase awareness about NIHL among all audiences, (2) motivate individuals to recognize situations that put them at risk for NIHL; and, (3) take action against NIHL. The WISE EARS! coalition is accomplishing this by demonstrating to a variety of audiences, both workers and the general public, how noise can damage hearing permanently. The education campaign fosters an understanding that everyone is at risk for NIHL and encourages individuals and employers to make hearing protection devices available and to make sure that the hearing protection is used. WISE EARS! has developed national and local hearing loss prevention programs for children and adults. A coalition of more than 70 national, regional, and local organizations, voluntary groups, unions and industry groups, organizations that advocate for children and older Americans, and national, state, and local government agencies participate in this national campaign. WISE EARS! is also engaged in helping meet the NIH prevention objectives of *Healthy People 2010* in chapter 28, lead by NIDCD. Materials for grassroots efforts, industry and employers, children and teachers and health educators are available through NIDCD's National Information Clearinghouse by 1-800-241-1044 and on the NIDCD website for WISE EARS! <http://www.nidcd.nih.gov/health/wise/index.htm> The materials are in English and in Spanish and the grassroots materials are written in plain English for basic literacy levels.

Research on Early Identification of Hearing Loss. In the United States, approximately 33 children are born each day who are deaf or who have a hearing loss significant to affect language acquisition. Many of these children are not identified until they are two years old or more, in spite of advances in the technology of early detection of loss. Recent results from NIDCD-supported research show that if children are identified with a hearing impairment by the time they're six months old and they receive appropriate intervention, they have significantly better language scores than children whose impairment was identified after six months of age. This is important because later identification is known to result in significant delays in spoken language and literacy. Data show that students with disabilities, including hearing impairment and deafness, are disproportionately disadvantaged. For example, the average reading level for deaf persons, at age 18 years, is estimated at the fourth grade. Without appropriate and timely identification and intervention, early childhood hearing impairment interferes with the development of oral/aural communication, impedes academic performance, and results in long-term vocational consequences.

A 1993 NIH Consensus Development Conference recommended universal screening of all infants for hearing impairment. NIDCD began addressing this recommendation by holding working groups to identify critical research needs in the area of early identification of hearing

impairment. NIDCD has incorporated several related goals into Healthy People 2010, the new decade's better-health agenda of the Department of Health and Human Services. In collaboration with many different organizations, NIDCD began disseminating information on the importance of early screening to the public, state and local governments, and physicians and other health professionals. The passage of the Newborn and Infant Hearing Screening and Intervention Act of 1999 led states to begin implementing programs to screen all infants for hearing impairment before discharging them from the hospital. According to the American Speech-Language-Hearing Association, thirty-two states and the District of Columbia have now enacted legislation that provides universal hearing screening to newborns.

The Third Workshop of the NIDCD Working Group on Early Identification of Hearing Impairment was held on September 19, 2000, in Rockville, Maryland. The purpose of the workshop was to identify critical research needs in the area of early identification of hearing impairment. This meeting followed working groups held in March 1998 and September 1997. The second workshop was held to identify some of the research opportunities offered by neonatal hearing screening programs, specifically in the diagnostic strategies for characterizing the hearing impairment and in the intervention strategies for remediating hearing impairment. The first working group, held in 1997 had addressed acceptable protocols for use in state-wide universal newborn hearing screening programs.

NIDCD supports a portfolio of research on early identification strategies and interventions as well as research in language acquisition, both spoken and signed, the development of cochlear implants, hearing aids and other assistive devices.

The NIDCD has recently re-issued a Request for Applications (RFA) titled, "Health Promotion and Disease Prevention: Health Communication, Development and Dissemination." The RFA will encourage investigators to identify important public health issues in human communication research and disseminate this information widely to the public. In the first round of awards, a major research and health communication program was funded in early identification dissemination.

Reaching Parents: Preventing Language Consequences of Hearing Loss. NIDCD has created materials for parents, teachers and health professionals to prevent delays in identification, diagnosis and intervention. The materials are available on a special web site: <http://www.nidcd.nih.gov/health/parents/index.htm>. The materials are available in English and Spanish. (One publication is offered in Vietnamese). Materials are also distributed at national meetings such as the Academy of Pediatrics, Physicians= Assistants, American Speech Hearing and Language Association and American Academy of Audiology (the certifying organizations), the American Academy of Otolaryngology, Head and Neck Surgery, the Urban League, American Public Health Association and many others. NIDCD will also sponsor a first-of-its-kind working group on *Communicating Follow-Through to Improve Outcome for Children Who are Identified as Deaf or Hard of Hearing.* The early identification, diagnosis and outcome initiative is also reflected in the *Healthy People 2010* objectives in chapter 28, lead by NIDCD.

NATIONAL INSTITUTE OF DENTAL AND CRANIOFACIAL RESEARCH

The recent, first-ever Surgeon General's Report on Oral Health in America provides important reminders that oral health and general health are inextricably linked. The National Institute of Dental and Craniofacial Research (NIDCR) was the lead agency for the report. Concomitantly, Healthy People 2010, the Nation's health objectives, contains 20 specific oral health objectives and numerous related objectives. The NIDCR is a co-lead agency for the Oral Health Chapter. Although there have been significant improvements in the oral and dental health of Americans over the past few decades, all groups of persons have not benefited equally. These disparities are particularly disturbing because most oral and dental diseases can be prevented or controlled. NIDCR is committed to reducing oral health disparities in the United States. Thus, health promotion and disease prevention research and related activities are major interests of the NIDCR. The following are examples of some of the institute's activities in this area.

In response to the Surgeon General's call to action in his recent report, Oral Health in America, the NIDCR is currently funding the development of a guide for effectively communicating children's oral health issues. The guide will be based on NIDCR-funded communications research to identify the messages, spokespeople, visuals, and symbols that help the public understand and prioritize children's oral health. The guide will also offer research-based recommendations for motivating individuals, communities, and the health professions to work together to create effective policies and programs that will make oral health care an integral part of overall health care.

Oral Health Curriculum Supplement. The NIDCR in collaboration with the NIH Office of Science Education is developing an oral health curriculum supplement for Grades 1-2 called *Open Wide and Trek Inside*. The curriculum is designed to link math and science concepts with basic information about oral health, disease prevention and health promotion. By using the mouth as a "laboratory", children integrate science concepts with basic information about the structure, function and importance of the mouth as an integral part of overall health. The lessons include information and activities to help students: a) learn about the structure and function of the mouth; b) observe and graph tooth loss; c) describe the characteristics of an environment and all living things; d) practice a scientific inquiry by conducting a simple investigation; e) achieve good oral health and nutrition; and f) explore, explain and understand the process of tooth decay.

Increasing Medicaid-Eligible Preschoolers' Access to Preventive Dental Care. NIDCR supported an innovative community-based study to increase the proportion of Medicaid eligible preschoolers that gain access to preventive dental care with resulting health benefits. This topic is important because -- despite the fact that the Medicaid program requires every state to provide preventive dental services for all eligible children under the Early and Periodic Screening Diagnosis, and Treatment (EPSDT) program -- in practice only one in five Medicaid-eligible children receive any preventive dental services. The initial intervention tested involved special outreach and parent education from local public health departments, brief additional training and

certification of local dentists, and enhanced fees for services provided by certified dentists, plus periodic newsletters for participating dentists. One year later, Medicaid-eligible children/families who had received the intervention and an equivalent number of Medicaid-eligible children/families not involved in the intervention were compared.

Children in the intervention group were 5.3 times more likely to have had at least one dental visit than were the children not enrolled in the preventive program. Thus, 43 percent of children in the intervention group had visited a dentist compared with only 12 percent of those not enrolled in the program. Moreover parents of children in the intervention group were significantly less likely to report that their children were fearful of dental care, and they reported higher levels of satisfaction overall with their children's oral health. Dissemination and refinement of these intervention approaches in other communities in Washington State are in progress.

Smokeless Tobacco Education Initiative. The NIDCR and the National Cancer Institute (NCI) have co-led a smokeless tobacco education initiative since the early 1990s. The initiative began as a partnership with Major League Baseball to break the link between the sport and smokeless tobacco. About 20 health and sports organizations now participate. The Institutes and their partners have developed a number of educational materials and activities, many of which feature professional athletes as educators and positive role models in the battle against unburned tobacco. This year, NIDCR released a publication designed to help adolescent smokeless tobacco users quit their addiction. The Institute is developing an online quitting guide for teens.

The NIDCR-NCI initiative helped catalyze a national campaign that was launched in the mid-1990s. Called the National Spit Tobacco Education Program (NSTEP), it is run by the nonprofit Oral Health America. NSTEP promotes oral health by educating youths, parents, and athletic coaches about the health dangers, including mouth cancer, of using unburned tobacco. Last year, Major League Baseball adopted NSTEP as its official anti-tobacco program. The NIDCR has collaborated with NSTEP on a number of educational activities, including exhibits at Major League Baseball All-Star Games, public service announcements, and videos. Currently NIDCR is collaborating with NSTEP on an educational video that will be distributed through youth sports leagues and other youth organizations.

Oral Health, Cancer Care, and You. “Oral Health, Cancer Care, and You” is a health awareness program from the NIDCR that explains how proper oral care can prevent or minimize painful complications in the mouth that affect up to one-third of patients undergoing treatment for cancer. Head and neck radiation, chemotherapy, and bone marrow transplantation can cause oral complications ranging from dry mouth to life-threatening infections. Many health care providers and patients are not aware, however, that these potentially serious side effects can be managed or prevented. In partnership with the NCI, National Institute of Nursing Research, and the Centers for Disease Control and Prevention, the Institute launched Oral Health, Cancer Care, and You, an awareness effort targeting oncologists, dental practitioners, and patients. Since the launch in 1999, over 550,000 campaign publications have been disseminated to these audiences through health professional meetings, patient support groups, and continuing education programs.

NATIONAL INSTITUTE OF DIABETES AND DIGESTIVE AND KIDNEY DISEASES

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) has an extensive portfolio of activities directed toward developing strategies for promoting healthy behavior. These include programs 1) to disseminate scientific advances resulting from NIDDK supported research to the public and health professionals and 2) to conduct clinical studies that identify risk factors for NIDDK related diseases and test interventions to prevent or delay the onset of disease or its development. Representative activities from these programs are summarized below.

Health Dissemination and Communication Programs

National Diabetes Education Program (NDEP). Current scientific evidence demonstrates that much of the morbidity and mortality of diabetes can be eliminated by aggressive treatment with diet, physical activity and new drug approaches to normalize blood glucose levels. However, a wide gap still exists between current and desired diabetes care and practices. The NDEP is an initiative sponsored by the NIDDK with the Centers for Disease Control and Prevention (CDC) to reduce the morbidity and mortality associated with diabetes and its complications, to promote early diagnosis, and, ultimately, to prevent the onset of diabetes. The objectives of the NDEP are to: 1) increase public awareness of the seriousness of diabetes, risk factors, and potential strategies for preventing diabetes and its complications, 2) improve understanding about diabetes and its control and to promote better self-management behaviors among people with diabetes, 3) improve understanding about diabetes by health care providers and to promote an integrated approach to care, and 4) promote health care policies and activities that improve quality and access to diabetes care.

Because minority groups are disproportionately affected by type 2 diabetes, special campaigns have been designed for African Americans, Hispanic Americans, Native Americans and Asian American and Pacific Islanders. The NDEP accomplishes these objectives through its Partnership Network of over 150 organizations representing diabetes health professional, religious, civic, social, fraternal, minority and business communities on the national, state and local levels.

Weight Control Information Initiative (WIN). More than half of U.S. adults are overweight or obese and over 65 percent of African American women and 65 percent of Hispanic women are obese or overweight. To address this growing public health concern, the NIDDK established the Weight-control Information Network as a national information service to provide health professionals and consumers with science-based information on obesity, weight control and nutrition. WIN supports a toll-free telephone number and a series of publications for consumers and has developed a health promotion campaign for African American women between the ages of 18 and 35 entitled, "Sisters Together: Move More, Eat Better."

National Kidney Education Program (NKDEP). The NIDDK is currently planning a new health education program, the National Kidney Disease Education Program, to address the

growing problem of kidney disease in the U.S. and to reduce the morbidity and mortality caused by kidney disease and its complications. The aim of the NKDEP is to raise awareness about the seriousness of kidney disease and the importance of prevention, early diagnosis and appropriate management of kidney disease, and the prevention and management of complications. Potential audiences for this initiative are health care providers and the people at highest risk for kidney disease. Specifically these are individuals with high blood pressure and diabetes especially, African Americans, Native Americans and some Hispanic/Latino populations who bear a disproportionate burden of hypertension, diabetes and kidney disease.

Health Promotion Research

Diabetes Prevention Program (DPP). The DPP is a multi-centered placebo controlled clinical trial examining whether interventions can be designed to prevent or delay the onset of type 2 diabetes in a population of high-risk individuals, by virtue of having impaired glucose intolerance. The interventions include intensive lifestyle, pharmacologic (metformin) intervention, and a placebo control. The lifestyle intervention focuses on a healthy diet and moderate intensity exercise designed to be sensitive to cultural differences and acceptable to the specific communities in which they are implemented. Participant recruitment and randomization was concluded in June 1999, exceeding its recruitment goal of 1000 per study arm having randomized 3,234 participants in the 3-arm study. The DPP participants are 68% women, 20% are 60 years of age or older and nearly 50% of DPP participants are from minority populations. Retention of participants is currently at 95% of those enrolled into the study. The study will end in 2002 and the projected announcement of study results in September 2002.

Action for Health in Diabetes (Look AHEAD). “Look AHEAD” is a multi site randomized clinical trial that will be conducted in 5000 obese individuals with type 2 diabetes recruited across the country, and studied for up to eleven years. The aim of the study is to investigate the health benefits and risks of a lifestyle intervention designed to achieve and sustain weight loss in this population. Look AHEAD will compare the impact of the lifestyle intervention with the effect of a diabetes education and support intervention on heart attacks, stroke, and cardiovascular death, as well as a range of other important health outcomes. Because the Look AHEAD lifestyle intervention is being designed to be translated into general practice, the results of the study have the potential to promote the health of most obese individuals with type 2 diabetes. Look AHEAD also is planning to over-recruit from a range of ethnic and minority populations in order to investigate the impact of the interventions in these groups.

Obesity Prevention in High Risk Populations. Because obesity is associated with so many serious conditions, including diabetes and cardiovascular disease, prevention of obesity is one of the most important goals of health promotion. In 1999, a trans-NIH initiative was issued soliciting pilot clinical studies of approaches to prevent obesity in high-risk populations. Twenty grants were funded as a result of the initiative. These studies are being conducted to demonstrate the feasibility of proposed concepts to be tested in full-scale clinical trials. Examples of the populations involved in the studies include low-income toddlers from minority populations; post-partum mothers recruited through the WIC program and perimenopausal women.

Type 2 Diabetes in the Pediatric Population. This program encompasses research on the pathophysiology; prevention and treatment of type 2 diabetes in children. Several large research projects are currently supported under this program. Dr. Roberto Trevino is conducting a school-based prevention program in San Antonio, Texas, which is aimed at altering risk factors (including obesity and a sedentary lifestyle) for diabetes in 4th grade (predominantly Mexican American) children. Dr. Lawrence Dolan is conducting an epidemiology and natural history study of risk factors for and the incidence/prevalence of type 2 diabetes in a large (4,373 student), racially diverse school district in Ohio. Other specific areas of support include defining the metabolic abnormalities in children with type 2 diabetes, developing practical, effective strategies for the prevention and/or treatment of type 2 diabetes in children, and understanding the basis for race/ethnic disparities in the incidence of type 2 diabetes in the pediatric population. This program has been extended through a recent Request For Applications to support clinical trials in type 2 diabetes in children titled, “Prevention and Treatment of Type 2 Diabetes in Children and Adolescents.”

Hemodialysis Study (HEMO). The death rate for hemodialysis patients in the United States is substantial, exceeding 20% annually. One of the factors associated with death in these patients is the amount of dialysis dose they receive. The optimal dose of hemodialysis is not known. Currently a nationwide, multi-center randomized clinical trial is being conducted to determine whether a higher than usual (or recommended) dose of dialysis reduces mortality, decreases hospitalization, and improves measures of nutrition. Results from the Hemodialysis (HEMO) Study are expected in the spring 2002. This and other NIDDK supported clinical trials will add to our knowledge about how best to care for hemodialysis patients.

Diabetes Research and Training Centers (DRTC). The authorizing language that created the DRTCs as part of the Diabetes Act of 1977 specified that DRTCs 1) engage in research that translates the outcomes of biomedical and behavioral science research into clinical care and 2) develop and evaluate innovative methods and programs for diabetes health promotion activities through the development of translation activities. One of the DRTCs located at the University of Chicago, developed the Neighborhood Clinic Diabetes Initiative, working in partnership with the Chicago Department of Public Health. This program is designed to evaluate and improve the quality of care and health outcomes for adult patients with diabetes seen at five neighborhood public health clinics. These and other DRTC translation and health promotion efforts have been enlarged through investigator-initiated grants within the NIDDK behavioral science research grants portfolio. A recent Program Announcement, “Translational Research for the Prevention and Control of Diabetes,” has extended these health promotion activities directed at improving health outcomes of individuals with diabetes and reducing the risk for developing diabetes in high-risk populations.

NATIONAL INSTITUTE ON DRUG ABUSE

The National Institute on Drug Abuse (NIDA) is the federal focal point for research on drug abuse and addiction. Over the past 25 years, research has taught us that drug addiction is a brain

disease that fundamentally changes the structure and function of the brain establishing patterns of compulsive drug use; however, the initial use of a drug is voluntary, and, therefore, a preventable behavior. Thus, NIDA is committed not only to researching the various drugs of abuse and how they affect the brain and body, but also to supporting a comprehensive portfolio of health promotion research and activities to:

- identify the risk factors that can lead to the initiation of drug use;
- uncover the behavioral mechanisms and processes that underlie addiction;
- train future researchers to work in the drug abuse and addiction field;
- develop effective ways to best prevent drug use initiation and progression; and
- disseminate information about drugs of abuse.

Understanding what determines an individual's vulnerability to substance abuse is crucial to the development of effective health promotion research and programming. There is no evidence that a single, unique factor determines which individuals will abuse drugs; rather, drug abuse appears to develop as the result of a variety of genetic, biological, environmental, emotional, cognitive, and social risk factors that interact with features of the social context. Thus, both individual-level factors, such as genetic vulnerability, shy, aggressive, and impulsive personality traits, and social context-level factors, such as exposure to substance use by parents and siblings or lack of academic and recreational programming after school hours, appear to make an individual more or less at risk for drug abuse and influence the progression from drug use to drug abuse to drug addiction. Research also shows that the greater the number of risk factors one experiences, the greater the vulnerability to drug use initiation and progression.

On the other hand, there are protective or resiliency factors that reduce the likelihood that individuals will develop drug-related problems. NIDA-supported research has uncovered many such protective factors including a stable temperament, a high degree of motivation, a strong parent-child bond, consistent parental supervision and discipline, association with peers who hold conventional attitudes, and consistent, community-wide anti-drug-use messages and norms. An accumulation of protective factors may counteract the negative influences of a few risk factors.

While research into risk and protective factors reveals vulnerabilities to addiction, behavioral research increases our understanding of the mechanisms and processes that underlie addiction. We have learned much about the ways in which animals and humans respond to their environment and the role these basic behavioral processes play in drug abuse and other drug-abuse-related phenomena, such as withdrawal, craving, and relapse, but there is still much more to be known. NIDA is expanding its efforts in the development of animal models, delving into questions about the cognitive and developmental consequences of substance abuse, and continuing to focus on locating genes that make people more or less at risk of becoming drug addicted through our Vulnerability to Addiction Initiative. We are working to integrate behavioral science with other disciplines through unique collaborative efforts like the Transdisciplinary Tobacco Use and Research Centers co-funded with the National Cancer Institute and the Robert Wood Johnson Foundation. NIDA continues to fund research on

behavioral approaches to addiction therapy and encourages the recruitment and retention of new researchers in behavioral research, as well as across the field of drug abuse research, through our research training program.

Crucial to health promotion efforts is developing effective means of prevention. NIDA-funded researchers have developed and tested a variety of efficacious prevention programs and have analyzed them to identify fundamental principles of effective drug abuse prevention. NIDA compiled these principles in *Preventing Drug Use Among Children and Adolescents: A Research-Based Guide* to provide schools and communities the needed tools to implement prevention programs tailored to meet their needs. NIDA is now taking these useful, but quite general principles to a greater level of specificity. Prevention programs cannot simply be replicated in any new setting: they must be responsive to the special characteristics of different locales as well as to differences in the needs and responses of audiences that may vary in gender, ethnicity, and age.

NIDA is supporting research that examines how to best tailor prevention programs to meet the needs of various audiences, communities, and subpopulations that are at increased risk for drug abuse. For example, NIDA-supported researchers developed the “Life Skills Training Program” a 3-year, multi-session, school-based program designed to teach drug resistance skills and information, self-management skills, and general social skills in combination with normative education. This program proved initially successful with white youth and resulted in 59 to 75 percent lower levels of tobacco, alcohol, and marijuana use. It has now been successfully adapted to meet the needs of minority, urban, and rural youth. This success has led researchers to modify the program to see if a shorter duration heightens retention, or if using an “infusion model,” where teachers learn the program and then implement it in their own unique manner in their classrooms, works as effectively. In both cases, early data is showing promising results.

Prevention research and health promotion often focus on developing programs for the general population through “universal” programs. Targeting groups at risk through “selective” programs, or individuals with risk-related behaviors through “indicated” programs, is often a secondary focus. NIDA funds research on universal, selective, and indicated programs and is expanding its efforts in the development and testing of selective and indicated programs. We are also supporting research on tiered prevention approaches that successively incorporate all three levels of intervention. NIDA research has shown that prevention programs can be further enhanced by providing services in multiple contexts – in the school, within the family, in the community, or through the media. We are also expanding our research to include a broader age range, from preschoolers to college age students, as well as a greater focus on early intervention.

NIDA is now diligently working to make sure that its science-based principles of prevention are used in real-life prevention programming and studied at the community level. We are expanding our research in prevention services – investigating new and innovative prevention approaches and developing and testing new methodologies for the study of prevention sciences. We are asking many questions: What components make prevention programs successful? What organizational, management, and delivery factors are related to the effective and efficient

dissemination of prevention services? Why are some communities not implementing prevention programs to the extent that we would like? What are existing barriers to implementation? Can existing community services delivery systems, such as the Co-operative Extension Service, be used for dissemination?

NIDA is also updating *Preventing Drug Use Among Children and Adolescents: A Research-Based Guide* to incorporate the latest data and science-based prevention programs and will hold NIDA's 2nd National Conference on Drug Abuse Prevention Research on August 9-10, 2001, in Washington, DC. This conference will provide researchers, policy-makers, and practitioners from across the country with a comprehensive review of the field of drug abuse prevention research. At this meeting NIDA-funded researchers will have the opportunity to assess the state of the science in the field and discuss how this knowledge should be used to guide and shape future prevention and health promotion research.

NIDA's health promotion efforts also include a commitment to promoting healthy behaviors, educating the public about drugs of abuse, and disseminating information to researchers, policy makers, and service providers. We have an extensive catalog of publications for the educated lay public, such as NIDA NOTES, which highlights the latest in drug abuse research, and our Research Reports, each of which presents the science regarding specific drugs of abuse. Our science education efforts include numerous publications and web-based information for a wide range of students. NIDA has also published over 170 research monographs and many researcher-oriented documents, and recently released the *NIDA Clinical Toolbox: Science-Based Materials for Drug Abuse Treatment Counselors* to the nearly 12,000 U.S. drug abuse treatment programs. This compilation of publications based on NIDA-supported research, includes the first three in series of drug abuse treatment manuals highlighting the "cognitive-behavioral," "community reinforcement plus vouchers," and "individual counseling" approaches. We produce a variety of public service announcements, news releases, and other media materials to communicate key research discoveries. NIDA also sponsors a variety of conferences and scientific meetings each year to promote education and further disseminate drug abuse research findings.

The health promotion efforts highlighted above are just a sampling of NIDA's many activities aimed at uncovering risks for addiction, understanding the behavioral aspects of this brain disease, preventing its initiation, educating the public about drug abuse and addiction, and disseminating research results to a broad audience, including researchers and clinicians.

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

The most effective way to prevent disease and disability is to understand the cause of an illness and change the conditions that permit it to occur. A key strategy for preventing many diseases or minimizing disease progression is to minimize or eliminate adverse effects of chemicals in the environment and food supply. This preventive strategy underlies the concept of "environmental health." The premier research enterprise for this discipline in the United States is the National Institute of Environmental Health Sciences (NIEHS) of the National Institutes of Health.

Human health and human disease result from three interactive elements: environmental exposures, individual susceptibility, and time. The mission of the NIEHS is to reduce the burden of human illness and dysfunction from environmental exposures by understanding each of these elements and how they interrelate. NIEHS achieves its mission through multidisciplinary biomedical research programs, prevention and intervention efforts, and communication strategies that encompass training, education, technology transfer, and community outreach.

The NIEHS pursues its goals by studying the impact on human health of a wide variety of chemical, physical, and biological agents found in the air, ground, food and water. In addition, the NIEHS also studies the effects on human health of multilevel social and psychosocial factors. Among the types of agents NIEHS studies are the following:

- Industrial chemicals
- Food and nutrients
- Agricultural compounds
- Infectious agents
- Pharmaceuticals and medicinal herbs
- Socioeconomic and lifestyle factors
- By-products of combustion and industrial processes
- Physical agents such as heat and radiation

The NIEHS has a primary focus to prevent disease rather than to find ways to treat illnesses already afflicting people. The Institute does this by approaching health as an integrated response of all organ systems of the body to the environment. Areas of special interest to NIEHS are cancer, birth defects, asthma, diabetes, infertility, neurodegenerative and developmental disorders, and autoimmune disease. Rather than focusing on one or two specific organs, like the heart and lung, NIEHS takes a whole-body approach and a preventive approach to human health.

Community Outreach and Education Program. NIEHS currently supports more than 25 Environmental Health Sciences Centers, Developmental Centers, and Marine Centers across the country (from the University of Miami to the University of Southern California). Every Center is required to develop and maintain community outreach and education activities. As a part of this effort, each Center defines the community that it serves and develops productive outreach efforts that are specifically designed to address environmental health issues and problems of greatest concern to that community. It is particularly important to deal with such issues when they arise in a population that may be more susceptible to environmental insults -- such as children, elderly, or socioeconomically disadvantaged communities. NIEHS Centers are encouraged to sponsor local efforts through community organizations and to collaborate with other existing outreach programs as well as other federal, state or local agencies in their area. The goal of the outreach program is to translate research results into knowledge applied to public health. These efforts serve as a bridge between the Center and the community. On one hand their activities are consistent with the research strengths of the Center, while on the other, they communicate to the Center the health issues and problems of greatest concern to the community.

Community-based Prevention Intervention. This initiative aims to implement culturally relevant prevention/intervention activities in economically disadvantaged and/or underserved populations adversely affected by an environmental contaminant. It is intended not only to foster refinement of scientifically valid intervention methods but also to strengthen the participation of affected communities in this effort. Community-based prevention/intervention research thus seeks to expand our knowledge and understanding of the potential causes and remedies of environmentally related disorders, while at the same time enhancing the capacity of communities to participate in the processes that shape research approaches and intervention strategies.

Research projects are conducted in a manner that reinforces collaboration between community members and research institutions. Relevant results are disseminated to the community in clear, useful terms. Moreover, these studies are designed to be culturally appropriate, i.e., due consideration is given to the social, economic, and cultural conditions that influence health status. Identifying and incorporating unique cultural factors into intervention strategies may result in increased acceptability, use, and adherence. This approach seeks to maximize the potential for change in knowledge, attitudes, and behavior. Only through realization of this final goal of the NIEHS mission, i.e., communication and partnership formation, can we ensure that research findings reach and are made relevant to affected individuals and communities.

A project in central Florida is investigating the relationship of lifetime pesticide exposure to neurologic dysfunction in fern, nursery, and citrus farmworkers. The project is a cooperative effort of NIEHS researchers with members of the Farmworker Association of Florida, a farmworker group. The goals of the project are to understand the relationship of pesticide exposure to neurologic dysfunction and disease and to describe health problems in an underserved group. At the conclusion of the study, results will be provided to the community in order to assist farmworkers in understanding and protecting themselves from the health effects of pesticide exposure. The study represents an innovative combination of science and public health. Another NIEHS-funded effort in Florida, the “Together for Agricultural Safety/Unidos para la Seguridad Agricola/Tet Ansamn pou Sekirite Agrikilti” project, is a collaboration between health science researchers from the University of Florida, staff from Farmworker Association of Florida, and a social marketing consultant from Best Start, Inc. The goals of the project include: developing and implementing a community-based, empowering intervention program to reduce the potential health effects associated with exposure to agricultural chemicals; and evaluating the effectiveness of this intervention by assessing its major process, outcome, and cost components.

The long-range goal of this program is to improve the knowledge and behavior of disadvantaged or underserved community members regarding prevention, detection, and treatment of environmentally related diseases and health conditions, and thereby reduce incidence and mortality rates of such diseases and conditions.

Children's Environmental Health and Disease Prevention Research Centers. NIEHS and the Environmental Protection Agency (EPA) have established a national network of Children's Environmental Health and Disease Prevention Research Centers whose research concentrations

are: a) environmental risks to minority children, b) respiratory disease, c) childhood asthma in the urban environment, d) inner-city toxicants and neurodevelopmental impairment, e) pediatric asthma, f) airway disease in children in rural communities, g) pesticide risks in children, and h) exposures and health of farmworker children. Each Center includes a community-based prevention/intervention research project, which is designed to translate findings obtained from basic laboratory investigations to strategies that can be applied in field and clinic settings to reduce disease morbidity. While the focus of activities at many of these Centers do include a large cohort of poor and minority children, NIEHS is investigating funding new Centers with health disparities as their top priority.

Worker Safety Training Programs. The Worker Education and Training Program was created by Congress to provide the educated workforce necessary for the vital, but dangerous job of cleaning up hazardous waste sites. This program encourages innovation for training difficult-to-reach populations by addressing issues such as literacy, appropriate adult education techniques, training quality improvement, and other areas not addressed directly by the private sector.

Recognizing that many of these hazardous waste sites exist in impoverished areas, the NIEHS added an extra component to this program, the Minority Worker Training Program. This program provides an outreach effort to give training to people with limited opportunities. The payoff to the community is that these individuals become skilled in identifying environmental problems that can often plague these areas. Their expertise and credibility in the neighborhood can be used to help educate residents in ways that provide a cleaner environment for all.

For example, this past year NIEHS trainees employed as compliance officers by the Illinois Metropolitan Water Reclamation District responded to a complaint and discovered suspicious-looking seepage into a drainage ditch leading to the Calumet River and Lake Michigan. Following the trail upstream, they discovered an abandoned site where drums of industrial solvents had been buried. The officers were able to conduct a preliminary assessment of the drums and then contacted the District's enforcement office personnel who initiated legal proceedings that led ultimately to the clean-up of the site.

Healthy People 2010 Leading Health Indicator for Environmental Quality. The Leading Health Indicators will measure the health of the nation over the next ten years. NIEHS is the lead coordinator for the Leading Health Indicator for Environmental Quality. Like the others, the Leading Health Indicator for Environmental Quality reflects a major health concern in the United States at the beginning of the 21st century. The Environmental Quality indicator was selected on the basis of its ability to motivate action, the availability of data to measure progress, and its importance as a public health issue.

NATIONAL EYE INSTITUTE

Public Education About Eye Disease and Visual Disability. The National Eye Institute (NEI) through its National Eye Health Education Program (NEHEP) has established public and

professional education programs to help promote public awareness on how to prevent vision loss. The NEHEP comprises more than 50 public and private organizations, which plan and implement eye health education programs.

The NEHEP has created educational kits on glaucoma and diabetic eye disease for health professionals and community leaders. The kits provide information and materials to educate people at high risk about eye health and the need for regular dilated eye exams. The NEHEP also has launched four national public service campaigns. Materials and messages of the campaigns have been tailored to high-risk populations.

AThe Eye Site® is a new traveling exhibit that was developed by the NEI and consists of five colorful kiosks. These are designed to attract a cross section of the population, from young people to senior citizens. The exhibit has an interactive multimedia touchscreen program; provides information on low vision services and resources; and displays aids and devices that help people with low vision. The objectives of the exhibit are to: increase knowledge about low vision B the warning signs, the causes, and what can be done about it; increase referrals of people with low vision to eye care professionals and from local eye care professionals to specialists in low vision; increase the use of adaptive devices among people with low vision; increase the use of vision rehabilitation services and devices by people with low vision; and, increase knowledge about the National Institutes of Health, the NEI, and its medical research.

Health Services Research. The NEI also conducts health services research that includes such diverse topics as increasing patient access to and utilization of vision care services, improving the delivery of vision services by eyecare professionals, and measuring the visual health of patients receiving eyecare services. Information on the number and characteristics of people with various eye conditions, together with estimates of the economic burden of these conditions, will be needed to understand the full impact of eye disease and visual impairment on the Nation=s health. Given the breadth of diseases affecting vision and the differences in age of those afflicted, multiple strategies may be warranted to determine the most appropriate use of diagnostic methods and treatments that have been scientifically demonstrated to improve vision and preserve sight. Increased public awareness of the personal and societal costs of visual impairment will be useful to ensure allocation of adequate health resources to Americans most in need of vision care services.

Population Based Research. The Collaborative Longitudinal Evaluation of Ethnicity and Refractive Error (CLEERE) Study is a multi-center, observational investigation of ocular development and refractive error development in schoolchildren. Specifically, CLEERE is designed to describe normal ocular growth in children ages 6 to 14 years, and to develop the ability to predict juvenile onset myopia before it is clinically evident. In addition to the more than 1,300 predominantly Caucasian children enrolled in the Orinda Longitudinal Study of Myopia, three additional clinical sites enroll African-American, Hispanic, and Asian children. The children are examined annually for at least four years. Examinations include visual acuity, refraction by a variety of methods, cover test at distance and near, accommodative response assessment with the autorefractor, peripheral refraction, and A-scan ultrasonography.

The Age-Related Eye Disease Study (AREDS) is a major research program to improve our understanding of predisposing factors, clinical course, and prognostic factors of age-related macular degeneration (AMD) and cataract. Eligible patients are randomized to treatment with placebo, antioxidants, zinc, or antioxidants plus zinc, and are followed for a minimum of 5 years. AMD and cataract are the leading causes of visual impairment and blindness in the United States. Based on many clinical studies, it is apparent that the frequency of both diseases increases dramatically after age 60. Although excellent treatments for cataract are available, there are no equivalent treatments for AMD. As the average lifespan of our population increases, the number of people who develop AMD will increase dramatically in the years ahead. Unless successful means of prevention or treatment are developed, blindness from AMD -- and its importance as a public health problem -- will increase.

The NEI is supporting two large studies--The Los Angeles Latino Eye Study and the Visual Impairment Among Hispanics in Arizona Study--designed to improve understanding of eye disease and visual impairment in our country's Hispanic population. The Los Angeles Latino Eye Study is partially funded by the National Institutes of Health's Office of Research on Minority Health. Hispanics as a racial/ethnic group stand apart from other racial/ethnic groups in terms of their population growth, socioeconomic characteristics, and health-related issues. Previous research has provided estimates of the prevalence of eye disease among Whites and African Americans in the United States, but no published comparable data exist on the U.S. Hispanic population. The absence of data on visual impairment for the United States Hispanic population hampers the creation of appropriate eye health services. The findings of these two research projects will help direct appropriate resources toward the major eye health needs of a population that is traditionally underserved. With information from these studies, it may be possible to tailor eye care education and programs to the Hispanic population, one that is at increased risk for eye disease.

NATIONAL HEART, LUNG, AND BLOOD INSTITUTE

Health Promotion Research

The National Heart, Lung, and Blood Institute (NHLBI) has a substantial research portfolio in health promotion, and supports numerous studies on health behaviors relevant to cardiovascular and lung health such as diet, physical activity, and smoking. The following are examples.

Obesity/overweight. PATHWAYS is a multi-center study of obesity prevention in American Indian schoolchildren through school-based interventions for diet and physical activity. The Girls Health Enrichment Multisite Studies (GEMS) is investigating approaches for preventing obesity in African-American adolescent girls at high risk for obesity. Four field centers are developing and testing interventions to prevent excessive weight gain as the girls proceed through puberty (beginning between 8 and 10 years of age).

Physical Activity. The NHLBI supports several studies testing the effects of various doses of physical activity (e.g., duration, intensity, frequency, type) on cardiovascular (CV) risk factors and cardio-respiratory fitness. Others are testing intervention approaches to improve physical activity levels in various population groups, such as obese or overweight women, low-income or Hispanic women, children and adolescents, college students, and African-Americans. The new Trial of Activity in Adolescent Girls (TAAG) will test the effectiveness of a coordinated school and community-based intervention in preventing the decline in physical activity and cardiopulmonary fitness seen in girls during middle school. About 30 percent of the estimated 5,000 students will be African-American, Hispanic, or Asian.

Nutrition. The NHLBI funds numerous studies that are examining the effects of various nutritional strategies on CV risk factors or testing intervention approaches to improve diet behaviors in various population groups. Results were recently reported from the DASH-Sodium study, which examined the effects on blood pressure of reducing sodium intake and of following the DASH diet -- a diet rich in fruits, vegetables, and low-fat dairy products (which had previously been shown to lower blood pressure). The NHLBI also supports a Nutrition Academic Award to improve nutrition training during medical and health professional education at 21 U.S. medical schools. It has two purposes: (1) to develop or enhance curricula to increase skills in nutrition, so that health professionals can better apply nutrition in their clinical practices and (2) to disseminate training materials and guidelines nationally.

Multiple Lifestyle Behaviors. NHLBI supports the PREMIER study, which is testing an intervention for multiple lifestyle behaviors to control blood pressure, including weight loss and weight control, reduced dietary sodium, increased physical activity, and following the DASH dietary pattern. Interventions are being tested in 800 participants with high normal blood pressure or stage 2 hypertension.

Health Promotion and Education

The NHLBI is also supporting a number of health promotion programs across the Nation in response to the Healthy People 2010 goals of eliminating health disparities and increasing years and quality of healthy life. NHLBI projects are based on proven science and emphasize applying knowledge already gained from funded research. Selected examples follow.

Asthma. To address the increasing prevalence, morbidity, and mortality from asthma, the NHLBI initiated the “Mobilizing Coalitions To Combat Asthma In High-Risk Communities” program. It seeks to eliminate disparities in treatment and adherence to both medical and educational advice. The call to action warranted intensifying efforts to increase the use of proven therapeutic and educational modalities to manage and control asthma.

Cardiovascular Disease (CVD). Similarly, the “NHLBI Enhanced Dissemination And Utilization Centers To Reduce Cardiovascular Disease Disparity” program targets high-risk communities and is being implemented in response to challenges outlined in Healthy People 2010. The program will establish a group of centers nationwide whose specific aim is to increase

the use of proven health promotion modalities to prevent development of risk factors and promote healthy behaviors. The centers will use science-based information to inform their communities of the public health burden of CVD and to develop and implement focused educational strategies to reduce this burden through changes in health care provider practice, patient behavior, and general public behavior related to prevention and control of CVD.

The NHLBI also conducts several projects that focus on improving the cardiovascular health of minority populations and women. The minority projects target Latinos, American Indians and Alaska Natives, and Asian American and Pacific Islanders. Examples include the following:

- A collaboration with the National Council of La Raza to implement “Promotores” (lay health educators)-based projects in three Latino communities. Promotores are being used to train, teach, and help individuals and families adopt heart-healthy behaviors.
- A partnership with the Indian Health Service to increase awareness in three American Indian/Alaska Native Communities (AI/AN) about the impact of CVD and both personal and community strategies that can be employed to improve heart-healthy behaviors. The project also seeks to develop a shared vision within the community to maintain a capacity to address heart-health issues and to develop an outreach model(s) that can be shared with other AI/AN communities.
- Cooperation with community-based organizations that work in Asian American/Pacific Islander communities to develop cardiovascular health awareness and promotion campaigns in groups such as Filipinos, Vietnamese, and Hmongs who have traditionally been overlooked and who have initial signs of increasing CVD risk factors.
- Development of a major focus on educating women about heart disease because of its alarming impact on them. About 9 million American women have heart disease. Each year approximately 500,000 women suffer heart attacks and about 370,000 die of heart disease. The NHLBI is holding a “Strategy Development Workshop: NHLBI Women’s Heart Health Education Program” to provide a foundation for a comprehensive, science-based women’s heart-health education initiative to educate health professionals, patients, and the public.

Physical Activity. In July 2000, the NHLBI and the National Recreation and Park Association jointly launched a health promotion program -- Hearts N’ Parks -- that targets people of all ages. Hearts N’ Parks is an innovative, nationwide, community-based program to reduce the growing trend of obesity and risk of coronary heart disease in the United States by encouraging Americans of all ages to engage in regular physical activity, follow a heart-healthy eating plan, and aim for a healthy weight. The Hearts N’ Parks program, which will continue to target neighborhoods with its messages, has great potential for reaching populations, both young and old, at high-risk for health disparities.

Sleep. The NHLBI recently launched a major five-year educational initiative to reach young children, as well as their parents, teachers, and health care providers, with the message that at least nine hours of sleep each night is important to children's health, performance, and safety. The goal is to instill in children -- and the adults who most influence them -- the understanding that adequate sleep is associated with good health and performance, as well as fewer accidents, an even more critical issue when children reach adolescence and need to be aware of the dangers of drowsy driving. Garfield creator Jim Davis and his studio, PAWS, Inc., are co-sponsoring this initiative. Garfield, himself, is the initiative's mascot and Star Sleeper.

National Education Programs -- High Blood Pressure, Cholesterol, Asthma. NHLBI has several ongoing national education programs directed at health professionals, patients, and the public. The National High Blood Pressure Education Program (NHBPEP) was established in 1972 with the goal to reduce death and disability related to high blood pressure through programs of professional, patient, and public education. The program employs a comprehensive strategy to mobilize, educate, and coordinate resources of groups interested in hypertension prevention and control. The National Cholesterol Education Program (NCEP), established in 1985, aims to raise awareness and understanding about high blood cholesterol as a risk factor for coronary heart disease (CHD) and the benefits of lowering cholesterol levels as a means of preventing CHD. The National Asthma Education and Prevention Program (NAEPP) was initiated in 1989 to address the growing problem of asthma in the U.S., particularly among children, African Americans, and the elderly. The NAEPP works to raise awareness that asthma is a serious chronic disease, ensure recognition of symptoms, and ensure appropriate diagnosis and effective control of asthma. All three of these national programs rely on a cooperative effort among professional and voluntary health agencies, state health departments, and community groups to promote implementation of its strategies and guidelines. Partnerships among the program participants enable a wide distribution network to support mass media efforts, as well as development and dissemination of stimulating educational materials and programs grounded in a strong science base.

Partnership with the American Heart Association. NHLBI and several federal agencies have signed a Memorandum of Understanding with the American Heart Association to fight heart disease and stroke. The organizations will work together on research; population- and community-based public education and health promotion programs; activities to bring about policy, systemic, and environmental improvements in cardiovascular health care delivery systems; media-based public awareness campaigns about the warning signs and symptoms of heart attack and stroke; and promotion of professional education and training.

NATIONAL HUMAN GENOME RESEARCH INSTITUTE

The overall mission of the National Human Genome Research Institute (NHGRI) is to understand the structure and function of the human genome and the role it plays in human health and disease. To that end, the NHGRI supports the Human Genome Project, an international research effort to sequence the human genome and determine the function of the genes contained

within it. The publication of the initial sequence and analysis of the human genome in February 2001 was a historic scientific achievement. The sequence information from the Human Genome Project has been continuously, immediately and freely released to the world, with no restrictions on its use or redistribution. This information is a major resource for all the areas of basic and applied biomedical and behavioral research in the 21st century. Already the Human Genome Project is producing research tools and information that are leading to improved detection and diagnosis of genetic disorders, both by our own intramural scientists and scientists in the broader biomedical research community.

To maximize the benefits of this new information, and to ensure informed public and personal decision making about science, medicine and policy, the public must understand the basic concepts of genomics and genetics. In support of this mission, NHGRI has a variety of community outreach, training, and research programs to inform and promote health research.

Education and Training Initiatives

Human Genome Project Multimedia Education Kit. It is well documented that scientific literacy, and genetic literacy in particular, is low in the U.S. In an effort to make the Human Genome Project and genetic research more accessible and interesting, NHGRI has created a free multimedia kit, entitled “*The Human Genome: Exploring our Molecular Selves.*” Its development was driven by the motivation to build genetic literacy and to share the excitement and awe of the human genome by ensuring that science teachers throughout the country have better access to the latest information about the Human Genome Project.

The kit is designed to educate, engage, and excite users about the human genome and genetics. The primary target audience is high school students though a much broader use with college students, voluntary health organizations and the general public is anticipated. The kit includes an award winning video documentary of leading genome scientists describing the importance of their research and a CD-ROM that contains (1) 3-D animation of fundamental concepts in biology and genetics; (2) a genetics timeline with over 90 key events in genetics; (3) a series of case studies which introduce users to some of the ethical and societal issues involved in genetics research; (4) an interactive activity that addresses what it means to be human as a species, a population, and as an individual; and (5) a talking glossary of genetic terms.

Genomics Short Course for Faculty at Minority Institutions. The annual Short Course updates college faculty from institutions with substantial minority enrollment on the latest developments in genetic technology, medical genetics, gene therapy, as well as ethics and grant-writing skills. The course also assists attendees in incorporating this information into classroom teaching to cultivate student interest in genetic research, and offers information on careers in genetics. Participants also receive hands-on laboratory experience using the latest genetic technologies.

National Coalition for Health Professional Education in Genetics (NCHPEG). Catalyzed in 1996 by the American Medical Association, the American Nurses Association, and the NHGRI, the National Coalition for Health Professional Education in Genetics (NCHPEG) is a national effort to promote health professional education and access to information about advances in

human genetics. NCHPEG is an interdisciplinary group comprised of leaders from over 100 diverse health professional organizations, consumer and voluntary groups, government agencies, private industry, and genetics professional societies.

NCHPEG received a grant from The Robert Wood Johnson Foundation that enabled NCHPEG to further its work and move toward self-supporting status. The grant had also allowed NCHPEG to hire a full-time Executive Director, an administrative assistant, and an intern. In addition, NCHPEG is developing an interactive CD-ROM on psychiatric genetics through a grant provided by the Ethical, Legal, and Social Implications Branch of the Human Genome Program, in the U.S. Department of Energy's Office of Science, Office of Biological and Environmental Research. The NHGRI will continue to provide leadership and staff support to NCHPEG.

Research Initiatives

Ethical, Legal, and Social Implications Research Program (ELSI). NHGRI recognized from its inception its responsibility not only to develop gene-finding technologies, but also to address up front the broader implications of these newfound abilities to decipher genetic information. NHGRI commits five percent of its annual research budget to study the ethical, legal, and social implications (ELSI) of genomic research. The ELSI research programs of the NHGRI and the Department of Energy sponsored a conference in January 2001 to reflect on the past, present, and future of ELSI research and to consider its impact on genetics research, health and public policy. The ELSI program has now completed its eleventh year, funded about 200 research and education projects, and generated about 450 grant products in the form of peer review publications, videos, and curricula.

In the Fall of 1998, five new goals for the ELSI research program were identified. They include an examination of 1) issues surrounding the completion of the human DNA sequence and the study of human genetic variation; 2) issues raised by the integration of new genetic technologies and information into health care and public health activities; 3) issues raised by the integration of knowledge about genomics and gene-environment interactions into nonclinical settings; 4) ways in which new genetic knowledge interacts with a variety of philosophical, theological, and ethical perspectives; and 5) how socioeconomic factors, gender and concepts of race and ethnicity influence the use, understanding, and interpretation of genetic information, the utilization of genetic services, and the development of policy.

In April 1999, the ELSI program released an RFA entitled "Studies of the Ethical, Legal and Social Implications of Research into Human Genetic Variation," based on two of the five-year goals identified. Of the twelve applications received in response to the RFA, six were funded in FY 2000. These projects address a range of topics, including: (1) a comparative analysis of the processes for obtaining informed consent to genetic variation research in Africa and the United States; (2) stigmatization in the context of genetic research; (3) pharmacogenomics and minority populations; (4) African American community review of genetic research; (5) risks and benefits of genetic research in Native American communities; and (6) the impact of genetic variation research on conceptions of ethnicity, citizenship, and family.

Community Outreach Initiatives

Genetics Resources on the Web (GROW). GROW seeks to encourage communication and collaboration among individuals and organizations interested in web-based information in human genetics. Its mission is to optimize web-based provision of high quality information about human genetics, especially information dealing with health.

A Search Working Group and an Assessment Working Group were established, and began developing strategies to enable GROW participating organizations to be more prominent on external search engines. The Search Working Group developed a “beta version” of a GROW-based search engine that would search simultaneously across the several dozen sites that are GROW participants. The Assessment Working Group focused on developing standards and quality assurance mechanisms for sites that wish to participate in GROW. It sought to help participating organizations improve their websites and to assure that all sites incorporated into the GROW search engine meet standards regarding not only quality of information presented, but also privacy and declaration of financial interests.

Consumer Day. The NHGRI conducts an Annual Consumer Day that is aimed at informing families, health care providers, policymakers, and patients about how scientists are using the information generated from the Human Genome Project to understand, diagnose, and treat disease and about the promise of genetic medicine to fundamentally change health care in the 21st century. NHGRI has worked with organizations representing minority and underserved communities in the design and promotion of this event.

Genetic and Rare Diseases Information Center. The NHGRI and the Office of Rare Diseases (ORD), in order to respond to the public’s need for information on genetic and rare disorders, plan to establish the NHGRI/ORD Genetic and Rare Diseases Information Center. The Information Center will focus on meeting the information needs of the general public, including patients and their families, health care professionals, and biomedical researchers. The Information Center will: 1) serve as a central, national repository of information materials and resources on genetic and rare diseases, conditions, and disorders; 2) collect, produce, update, and disseminate information on the diagnosis, treatment, and prevention of genetic and rare disorders; and 3) coordinate with organizations interested in genetic and rare disorders to explore networking capabilities, avoid duplication of effort, and identify information gaps.

NATIONAL INSTITUTE OF MENTAL HEALTH

General and mental health states are established by genetic assets and vulnerabilities and environmental influences. These influences include nutrition, health and disease status of the mother during pregnancy; exposure to environmental toxins, bacteria, viruses and other hazards; influences of the home, school and neighborhood environments; behavior of parents, care givers, teachers and other significant adults in the child's environment; peer group influences; and exposure to traumatic and harmful events, whether physical, psychological or social in nature.

Given that health states and behavioral patterns are multiply determined, NIMH continues to encourage and support research to identify:

- the relative contribution of potential risk and protective factors;
- the significance of intensity and duration of exposure to a particular factor;
- the influence of sociocultural and socioeconomic context;
- the specific phase(s) of developmental vulnerability;
- effective approaches to preventing negative health and mental health outcomes and promoting healthy adjustment; and
- methods for integrating effective interventions into practice and for disseminating findings to health professionals and the public.

Research to Identify Factors that Increase and Decrease Risk for Health Outcomes

This portion of the portfolio is exploring the links between behavior and disease, the influence(s) of social, cultural, economic, and educational factors on illness and behavior, the role of inherited susceptibility and the interaction between this susceptibility and environmental contexts and factors. These studies form the basic knowledge needed to prevent and promote mental health.

NIMH is funding numerous studies that focus on individual, family, peer, neighborhood, school, community, and structural factors that can increase or decrease the risk of psychopathology and serious behavioral problems. For example, the portfolio includes several long-term studies that follow specific groups, or cohorts, of young people across the years of childhood, adolescence, and into adulthood. These studies are concerned with a host of childhood and adult outcomes, including psychopathology, substance abuse, chronic behavior problems, academic failure, and early parenthood. Of growing interest are studies examining the effects of racial, socioeconomic, and other contextual stressors on a variety of health outcomes, and the types of coping strategies and environmental resources that increase the likelihood of good outcomes.

Another area of growing interest are studies examining co-occurring mental and physical disorders, in an attempt to identify common risk and protective factors and to understand how the onset of one disorder affects the likelihood or course of the other. Common to many of these studies are attempts to examine factors that may protect certain individuals from negative outcomes often associated with certain environmental or other risks.

Research to Develop Strategies for Promoting Healthy Behaviors and Preventing Disorder

The findings from the risk and protective factor research noted above allow for the recognition of threats to health and for interventions to reduce these threats. This information has led to the development and testing of interventions which seek to reduce risk and promote healthy adjustment and good mental health.

NIMH continues to explore ways of enhancing, and/or making more available and accessible successful interventions, such as prenatal and early childhood nurse home visitation. One such program has been shown to improve pregnancy and other maternal health outcomes, promote children's health and development, strengthen families' economic self-sufficiency, and reduce rates of childhood injury, child abuse and neglect and associated problems (e.g., running away, substance abuse, arrest, multiple sexual partners.)

Moreover, new knowledge regarding the development of child, adolescent and adult psychopathology and co-occurring health problems has led to pioneering new research on interventions with young children and high risk families that involves assessing and building on family strengths, assistance with parent management skills, child and parent interaction styles, and acquiring early reading and language skills known to decrease individual risk of negative health and mental health outcomes (conduct problems, anxiety, alcohol use, tobacco use, etc.). Other approaches include psycho-educational interventions for children living in highly stressful circumstances (e.g. poverty, divorce, bereavement) and for child victims of violence.

Common to many studies are components that promote: competency in academic, social, and problem solving skills; effective parenting by supporting families; supervision and monitoring of youth; and pro-social peer experiences. Interventions to support effective parenting have received great attention because of the link to school performance, peer relationships, and various domains of adolescent functioning. The role of effective parenting has been demonstrated in multiple family structures, including single-, step- and foster families. Successful interventions aimed at foster parents of delinquent adolescents have now been disseminated within several state systems, and being adapted for testing in younger foster children.

Other research projects focus on determining whether therapeutic techniques effective for treating depression, anxiety and other disorders in adults, for example, can be applied to promoting healthy adjustment and preventing disorder in adolescents. Going beyond the effects on symptoms of disorder, this research also focuses on how these interventions can promote positive and healthy functioning in school, at home, and in the community. These studies reflect growing awareness of the chronic nature of many mental disorders and the need to intervene early to promote healthy functioning, minimize the severity of episodes when they do occur, and prevent subsequent relapse.

Research is also addressing generic principles of behavior change and factors that influence participation in interventions, of relevance to the design of effective interventions across the health spectrum.

Dissemination of Findings to Health Professionals and the Public

Through a variety of activities, NIMH is working to translate research findings into new or more effective clinical practices, including broad-based interventions, and to communicate practical approaches for health promotion. Broad themes include:

- Promoting healthy behavior and mental health;
- Promoting healthy parenting and child behavior;
- Promoting early identification and intervention for mental health problems; and
- Promoting the use of effective prevention and early intervention.

Examples of NIMH collaborations with other Federal agencies and non-Federal entities to inform new health promotion initiatives and to identify best practices:

- Briefings to Congressional leaders and Executive Branch cabinet leadership regarding the application of research on behavior change to reduce aggression, violent behavior and adjustment problems of youth.
- Collaboration with SAMHSA/CMHS/FEMA, VA, DOJ, and DOD to identify and support best practices for health promotion after disasters, war, combat, terrorism, and other situations characterized by mass threat to or loss of life.
- Collaboration with DOE, DOJ, HUD, and other HHS agencies to identify and communicate best practices for preventing violence and promoting healthy development; and collaboration with the CDC in developing the Guide to Community Preventive Services (Chapters on Depression and Violence).
- Collaboration with DOJ, DOE, multiple NIH ICs, and other HHS agencies for a NIH Consensus Development Conference on preventing youth behavior problems.

Examples of NIMH communications activities with health providers and the public:

- Collaboration with multiple federal agencies to develop and launch the National Youth Violence Prevention Resource Center <http://www.safeyouth.org/home.htm>. Contains information for parents, professionals, and teens about: Helping Your Children Navigate Their Teenage Years: A Guide for Parents After School Programs, Child and Adolescent Mental Health, Community-Based Collaboration, Gangs, Intimate Partner and Family Violence, Risk and Protective Factors for Youth Violence, School Violence, and others.
- Communicate disease prevention and health promotion messages via national media outlets (newspaper, television, radio, and Internet): Helping Children and Adolescents Cope with Violence and Disasters; Inventory of Federal Activities Addressing Violence in Schools; Teens- The Company They Keep; Youth in a Difficult World; Attention Deficit Hyperactivity Disorder; Facts About Post-Traumatic Stress Disorder; Reliving Trauma- Post-Traumatic Stress Disorder; Research Brings Hope for Veterans and Millions of Other Americans Who Suffer From Post-Traumatic Stress Disorder.
- Coordinate with national mental health advocacy organizations in setting research priorities and dissemination of health promoting messages (e.g., NIMH sponsored town meetings in Texas, Chicago, Pittsburgh).

- Coordination with multiple federal agencies, advocates, and scientists in developing and disseminating *Youth Violence: A Report of the Surgeon General* – containing practical approaches for promoting healthy behavior and preventing violence.

NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE

The mission of the National Institute of Neurological Disorders and Stroke (NINDS) is to reduce the burden of neurological disease by supporting and conducting research on the healthy and diseased brain, spinal cord, and peripheral nerves, and disseminating the results of this research to the public. As part of this mission, NINDS directs an extensive health promotion effort to raise awareness of the signs and symptoms of stroke, the need for urgent action if experiencing a stroke, and the possibility of a positive outcome with timely hospital treatment. NINDS is working closely with the Brain Attack Coalition (BAC), a group of professional, voluntary, and government groups dedicated to reducing the occurrence, disabilities, and death associated with stroke. The BAC has been significantly involved in NINDS' efforts to increase awareness of stroke symptoms and recently prepared a stroke symptom list that is now used by all participating BAC organizations. In the June 21, 2000, issue of the *Journal of the American Medical Association (JAMA)*, NINDS and other members of the BAC presented the first clearly defined set of recommendations for hospitals to implement stroke centers, teams and other programs to improve stroke treatment in the United States. The announcement brought stroke into the national spotlight. NINDS also has created a checklist for communities entitled *Do You Have Access To The Best Treatment For Stroke?* On behalf of the Brain Attack Coalition, the NINDS has created a web-based resource for healthcare professionals to provide the latest tools for diagnosis and treatment of stroke.

As part of its “*Know Stroke. Know the Signs. Act in Time.*” campaign, NINDS has developed a series of public education materials including: airport dioramas jointly sponsored with the National Stroke Association, billboard displays, consumer education brochures, exhibits, and new radio spots, all designed to increase awareness of stroke. These radio spots include several specifically targeted to Hispanic communities. NINDS also created and distributed “Ambulance,” a television public service announcement jointly sponsored by NINDS and several leading stroke organizations. The PSA has been viewed by millions of Americans. At the community level, NINDS partnered with the Black Commissioned Officers' Advisory Group of the U.S. Public Health Service and the American Stroke Association to host a stroke education and screening event. The event, called “Stroke Sunday,” was held at Mt. Calvary Baptist church in Rockville, Maryland and featured U.S. Surgeon General David Satcher as the keynote speaker discussing the need for more stroke awareness in the African-American community.

In the future, NINDS looks forward to the continued expansion of its stroke education efforts with a community education kit that will be distributed nationally to seniors communities, hospitals, pharmacies and through partnerships with African- American organizations.

NATIONAL INSTITUTE OF NURSING RESEARCH

Studies focusing on health promotion constitute a large component of the funded research at NINR and include research projects, research training (both individual fellowships and institutional training grants), and core centers (designed to facilitate the infrastructure for research at schools of nursing). NINR projects include a broad range of health promotion activities across the lifespan.

Chronic Illnesses. Chronic illnesses can affect the quality of life of patients and their families. Yet little scientific information is available regarding the health promotion needs of the chronically ill and disabled. Type I diabetes, for example, is a serious, long-lasting disorder that requires close management. NINR-supported researchers are testing an intervention to help children manage their own condition and adhere to healthy behaviors that will decrease the likelihood of long-term physical impairment and psychological and social problems. Adding coping-skills training has been successful in helping teenagers maintain normal blood sugar levels. Other research addresses quality of life for patients with neurological disorders, such as multiple sclerosis (MS). Results indicate that health-promoting behaviors can mediate the severity of MS. Although treatments are not currently able to stem progression of the condition, health-promoting behaviors can affect the quality of life for these patients. Another research project targets adults with chronic illnesses who are 65 years and older by testing the effectiveness of 16 weeks of dynamic strength training, aerobic walking, or a combination of both, on functional ability, immune function, and cardiovascular fitness.

Physical Activity. Physical activity and regular exercise are critical in promoting health at all ages, however we now know the importance of starting early. Investigators are studying the use of health education and physical activity interventions to reduce cardiovascular disease (CVD) risk factors in third and fourth graders. The children lost body fat, reduced cholesterol and gained physical fitness in just eight weeks, in contrast to a control group of children, who gained weight. Researchers are following these children and are now including children and adolescents through all stages of puberty. The goal is to determine the contribution of obesity, lipids, heredity and environmental factors (including physical activity, eating habits, and smoking) to CVD risk factors in children.

Other investigators are studying the beneficial effects of exercise for various age groups of women. They are testing the effectiveness of an exercise counseling program via telephone. A walking intervention is used to increase physical activity in sedentary, perimenopausal, low-income African American and Caucasian women. Preliminary findings indicate that women receiving the intervention show significant physical and psychological improvement. Another study tests an intervention to improve physical activity and functional capacity of older women, with an emphasis on engaging them in regular exercise regimens. NINR investigators are also determining the effectiveness of a home-based walking program in alleviating common physical and psychological symptoms and improving physical fitness and exercise behavior in sedentary employed midlife women. Preliminary data reveal that the intervention is less effective for African American women than for Caucasian women, suggesting the need for a more intense intervention for this minority population to identify and overcome barriers to exercise.

Healthy Nutrition Habits. Osteoporosis constitutes a major health problem in the United States that affects postmenopausal women. Although optimum development of the skeleton during childhood is critical to prevention of osteoporosis, bone health of children has not been adequately addressed. An NINR study is determining if girls aged 9 – 13, who consume a high calcium diet, will have a greater increase in bone quality than other girls who consume a diet that includes a typical amount of calcium. Preliminary data reveal that girls on the high calcium diet may be gaining more bone mass than the other girls. Another study is examining the influence of television on Hispanic and Caucasian children’s risk-taking behaviors and eating habits. Investigators are using focus groups of ethnically-diverse parents and children in order to develop a behavioral intervention that includes strategies and incentives to influence these children to reduce TV viewing and risk-taking behaviors, make better food choices, and adopt healthier lifestyles.

Cessation of Tobacco Use. Many Americans living in Appalachia experience increased poverty and a high prevalence of tobacco use. To develop effective treatments for tobacco dependence in this population, NINR research is assessing factors that influence tobacco consumption (i.e., demographic, cultural, cognitive, and behavioral factors and patterns of tobacco use). Findings will be helpful in designing an intervention for rural adults. Other investigators are testing a worksite smoking prevention and cessation intervention for employed youth.

Promotion of Mental Health. Suicide is a leading cause of death among adolescents. NINR-funded research is testing an intervention for youth at risk of suicide that combines support from both counselors and parents. Findings from this research will help develop strategies for curbing depression, anger, and behaviors that may imply suicide risk. Another study is on children who exhibit behavioral problems and conduct disorders. Without sufficient intervention, these children may develop higher rates of crime, drug abuse, and school dropout. It is important to recognize health disparities as well. Researchers are testing the effectiveness of a 12-week program for parents and daycare teachers of a group of minority toddlers who are at particular risk for behavioral problems. Other researchers are focusing on inner-city first and second grade minority children. They are testing the effectiveness of a three-part program consisting of parenting skills, skills for teachers, and drama therapy. Yet another project tests the effectiveness of an early intervention treatment program that targets child risk factors and consists of a videotape intervention for school children, a family training intervention and a parent/teacher school training program for families with young children who have oppositional defiant and conduct disorders. Prior studies have documented that the intervention for parents was highly effective in changing children’s behavior at home, however, this study is focusing on improving children’s behavior at school.

NATIONAL CENTER FOR COMPLEMENTARY AND ALTERNATIVE MEDICINE

In 1998, Congress created the NCCAM and empowering the center to conduct basic and clinical research, train researchers, and communicate its findings to the public and professionals. NCCAM presently supports a broad portfolio of research, research training and educational grants and contracts. Because of its short history, however, NCCAM’s portfolio does not yet reflect the desired balance across all potential complementary and alternative medicine practices.

Complementary and alternative medicine (CAM) practices are best described as those not presently considered an integral part of conventional medicine. Generally, patients who choose CAM approaches are seeking ways to improve their health and well-being and to relieve symptoms associated with chronic illnesses.

In 1999, NCCAM and NIA released an RFA for a *Ginkgo biloba* Prevention Trial in Older Individuals. A 6-year multicenter study to test the efficacy of ginkgo (botanical product) on older individuals who are at risk for dementia (cognitive decline in memory) was subsequently awarded to the University of Pittsburgh School of Medicine. This randomized, double-blind, placebo-controlled, Phase III trial will determine the effect of 240 mg/day of *Ginkgo biloba* in decreasing the incidence of dementia, in general, and Alzheimer=s disease, specifically. The 3,000 subjects will be aged 75 years and older. Secondary outcomes, including changes in cognitive function, incidence of cardiovascular disease and total mortality, will also be measured. If *Ginkgo biloba* extract is found effective, then thousands of individuals at high risk of developing dementia will for the first time have an inexpensive and safe prevention option. However, even if the extract proves ineffective as a prevention agent, these data will provide major new insights to the U.S. public as to the nature, onset, and risks for dementing illnesses and allow for informed decision making concerning continued use of the botanical. To date, the trial represents the single largest prospective study of intellectual decline in aging Americans.

NCCAM is also supporting many smaller trials of and basic science research as to novel approaches to health promotion/disease prevention including: (1) the effect of high-dose Vitamin E on carotid atherosclerosis; (2) the effect of transcendental meditation in reducing cardiac events; (3) the prophylactic effects of omega-3 fatty acids in preventing recurrence in patients with bipolar disorder; (4) the influence of a macrobiotic diets, as compared with the American Heart Association Step 1 Diet, and an AHA diet plus flaxseed, in preventing bone loss in postmenopausal women; (5) the effect of black cohosh and red clover in reducing the frequency of menopausal symptoms, relieving sexual dysfunction, and improving quality of life in menopausal women; (6) the effect of soy protein isolate enriched with isoflavones in preventing bone resorption in postmenopausal women; (7) the effect of *Scutellaria baicalensis* (Chinese herbal medicine) in preventing skin cancer; and (8) the benefits and hazards of ketogenic low-carbohydrate diets in weight control.

NCCAM=s next generation of research initiatives in health promotion/disease prevention include studies of prevention of osteoarthritis onset, progression and disability and the efficacy of cranberry in the prevention and treatment of urinary tract infections. Health promotion and disease prevention are a major impetus for Americans to turn to CAM. For this reason, it occupies a pivotal position in our research agenda.

NATIONAL CENTER FOR RESEARCH RESOURCES

The NCRR creates, develops, and provides a comprehensive range of human, animal, technological, and other multidisciplinary resources. As part of NCRR's commitment to prevention research, all four NCRR divisions support health promotion activities. A few examples of these activities are provided below.

Biomedical Technology: Genetic Analysis Tools Applied to Prostate Cancer. Prostate cancer is the most common visceral cancer and the second leading cause of cancer mortality among men. Last year, approximately 180,400 men in the U.S. were diagnosed with prostate cancer, a disease that accounts for about 32,000 deaths annually. Little is currently known about what makes some prostate cancers biologically aggressive and more likely to progress to metastatic disease but the NCRR-supported Human Genetic Analysis Resource at Case Western Reserve Medical Center has recently completed a study of over 500 brothers with prostate cancer that has identified five regions in their genes that are directly linked to the appearance and aggressiveness of the cancer. These results when combined with future studies are likely to reveal prostate cancer susceptibility genes which will open up new avenues for screening and therapy for this pervasive disease as well as help to clarify the biologic basis of prostate cancer development.

Clinical Research: Altering Behavioral Risk for Drug Dependence. Traditional approaches to the problem of drug addiction have focused on treatment after drug dependence has been well established, and these studies have consistently produced negative results. However, NCRR-supported researchers at a General Clinical Research Center at the University of Texas Health Science Center in Houston are trying to alter behaviors associated with drug addiction before drug dependence occurs. Such behaviors include aggression and impulsivity that contribute to a "temperament" that has been predictive of subsequent drug dependence and criminal behavior. The alteration of aggressive and impulsive behavior under controlled laboratory conditions is being studied employing four pharmacological agents in subjects with a history of childhood conduct disorder and antisocial personality disorder. The research should provide information about the effects of these therapeutic agents on aspects of aggression and impulsivity that place individuals at risk for later drug dependence.

Comparative Medicine: Diet and Genotype in Primate Atherosclerosis. Atherosclerosis and its clinical complications, heart attack, stroke, and peripheral vascular insufficiency, remain a major cause of morbidity and mortality in the U.S. A major goal of NCRR-supported research at the Southwest Foundation Regional Primate Research Center is to use a systematic genome search to identify individual genes that contribute to variation in susceptibility to atherosclerosis, and to define genotype-diet interactions involved in determining lipoprotein and adiposity-related phenotypes. Special colonies of pedigreed baboons are being used as models of cardiovascular disease in humans. The investigators have completed a basic genetic linkage map of several hundred microsatellite markers and have already identified the locations of three major genes that may affect an individual's risk of atherosclerosis. Additional baboons are being bred for use in a dietary challenge that will measure genetic interactions with dietary fat and cholesterol in

determining plasma lipoprotein characteristics, and the resultant effects on the rate of development of atherosclerosis.

Research Infrastructure: Shaping Health Behaviors through to Prevent Childhood Obesity.

The epidemic of obesity in children and adolescents is a major health problem and a challenge to prevent. Many obese preschoolers, elementary school children, and adolescents become obese adults, increasing their risk for chronic diseases, such as type 2 diabetes, heart disease, sleep apnea, stroke, joint pain and some cancers. Supporting efforts to reverse this epidemic, an NCCR-supported Science Education Partnership Award (SEPA) program is promoting obesity prevention in Colorado. Three universities, a nutrition center, and local science museums are working together to reduce the rate of childhood and adolescent obesity by providing interactive, fun science education using examples and exercises from food, nutrition, healthy eating, physical activity and the biology of body weight regulation. These model programs will evaluate the rate of weight and body mass index gain of individual students and improvement in their health behaviors. In addition, the researchers plan to develop and implement a public health campaign that promotes obesity prevention in children by encouraging active lifestyles and healthy eating.

Partnerships: Behavioral Health Sciences to Prevent Mental Illness. NCCR-supported SEPA investigators at the University of Arkansas have developed a mental health outreach program that targets teachers and school personnel, students and the general public. The program includes six modules that focus on mental health disorders that have high rates of prevalence and severity, and/or availability of evidence-based treatments. The program includes summer teaching sessions, presentations at state-wide meetings, collaboration with the science museum, student internships, teacher tool kits, classroom resources, computer assisted interactive programs, and other innovative learning materials. The program also measures changes in knowledge, attitudes, and behaviors of participants through pre and post course surveys. During the second phase, investigators will engage in widespread dissemination through established networks in southern, rural states and through national organizations to improve awareness of the technological advances in the recognition, prevention and treatment of mental disorders and to enhance access to mental health services for students and teachers.

FOGARTY INTERNATIONAL CENTER

The mission of the Fogarty International Center is to promote and support international scientific research and training to reduce global health disparities. To further its mission, FIC offers a number of research and training opportunities to foreign and U.S. scientists, which support research that addresses healthier and more stable livelihood worldwide. FIC's research and training programs specifically target low- and middle-income nations, where both the disease burden and the demand for investigators in various disciplines are great. Studies conducted in low- and middle-income nations benefit both foreign and US populations, and lead us to a better understanding of our own health and the health of others.

Current Programs in Health Promotion

Environmental and Occupational Health. The Environmental and Occupational Health program was established to build global capacity and collaboration to better understand, investigate, control and prevent environmental and occupational health problems in developing countries and the United States. Studies are targeting environmental and occupational health problems by doing laboratory and toxicology research; epidemiologic research and surveillance; environmental monitoring; workplace risk assessment; engineering control; hazardous waste assessment; and disease prevention and control. An innovative FIC funded study in Poland will be conducting research directed at understanding the mechanisms underlying the cardiovascular responses to cigarette smoking during alcohol consumption in health human and in patients with cardiovascular disease. The data should contribute significantly to public health's understanding of the mechanisms linking cigarette smoking and alcohol to acute cardiovascular events.

International Training and Research Program. The International Training and Research Program aims to enhance domestic and foreign population research programs through training and international collaborative studies related to population, including the study of reproductive processes, contraceptive development, contraceptive and reproductive evaluation, reproductive epidemiology, and social and behavioral factors that influence population dynamics. A FIC funded study in the Anhui Province, China is investigating the effects of social change on family functioning and its consequence for the physical and psychological health of elderly people. China's rapidly changing social and economic spheres provide an excellent background for this project. The study outcomes in China will also enhance the investigator's funded research to study the effects of social on family functioning and well being of older people in the U.S.

New International Clinical, Operational and Health Services Research and Training Award. FIC recently released the International Clinical, Operational and Health Services Research and Training Award (ICOHRTA). ICOHRTA intends to strengthen the global capacity to conduct clinical, operational, health services and prevention science research necessary to measure incidence and prevalence of diseases and chronic conditions. The awards will characterize disease burdens, and devise and evaluate practical and affordable therapeutic or preventive interventions and help developing nations contribute to, and benefit from, international efforts to apply current knowledge and new discoveries to clinical public health practice.

Upcoming Initiatives in Health Promotion

Tobacco. As cited by the World Health Organization, current trends show that 7.5 percent of the world's 53 million annual deaths are attributable to tobacco use, and if present smoking patterns continue, the number of tobacco deaths will rise to 10 million deaths annually by 2025. Seventy percent of this annual increase is expected to occur in developing nations.

Tobacco control research in the global context will greatly improve a range of public health problems worldwide. FIC intends to address the burden of tobacco consumption, including smokeless tobacco products, in low- and middle-income nations by 1) pursuing observational,

intervention and policy research of local relevance and 2) building capacity in these regions in epidemiological and behavioral, prevention, treatment, communications and policy research.

Stigma. Stigma can pose complex social and medical problems to all areas of health. The Fogarty International Center has launched an initiative that focuses on stigma and disease in the U.S. as well as in the developing world. In cooperation with other NIH Institutes, a panel of outside experts is being formed to examine how stigma differs across diseases and cultures. This collaboration is geared towards the intellectual and logistical planning of a stigma conference Fall 2001. The conference will look at ways to combat disease-associated stigma in order to improve global health. Ultimately, these activities will lead up to the development of a research agenda to answer crucial these public health questions.

NATIONAL LIBRARY OF MEDICINE

The National Library of Medicine (NLM), the source of the Index Medicus and MEDLINE, is a pioneer in using computers to make medical information available to scientists and health professionals. Today, the Library is using modern communications technology to make its unparalleled collections and other authoritative health information available also directly to the general public. The managed care environment is pushing members of the public to take responsibility for their health by becoming well-informed patients. Increasingly members of the public and health professionals turn to the Internet for information, where there are already thousands of health-related Web sites, including many with inaccurate, out-of-date, or misleading information. As the world's largest medical library, NLM has a responsibility to develop technologies and information systems that meet the public's interest in accurate, current, and understandable health information. NLM is partnering with federal agencies, voluntary health organizations, and others to identify gaps, arrange for development of understandable content, and help the public make effective use of electronic health information.

Many of these efforts are also directed toward remedying the disparity in health opportunities experienced by important segments of the American population. These efforts are based on the belief that improving access to affordable and easy-to-use health-related information (in the form of published literature, databases, and the authoritative content of others) can help solve racial and ethnic health disparities.

The introduction of free and convenient access to MEDLINE via the World Wide Web has had a profound effect on the usage of the database. Searching had been simplified to the point where the public encountered no difficulty at all in retrieving relevant journal references on any biomedical subject. When we learned that about one third of all MEDLINE searching was being done by consumers, we realized this presented a wonderful opportunity. Why not create a service that not only will provide selective MEDLINE results that are useful to the consumer, but also link the Web user to authoritative, full-text health information written for the general public? The Library created such a service and quietly introduced *MEDLINEplus* in October 1998.

Since its introduction, the service has grown tremendously, both in terms of its coverage of health and its usage by the public. As of January 2001, MEDLINEplus was being consulted 3 million times each month. The original 24 “health topics,” containing detailed consumer information on various diseases and health conditions, have been increased to over 400, and more are added weekly. As of January 2001, the NIH ranked number three overall with regard to home usage of health information web domains. Within NIH, NLM web sites lead the way, accounting for almost half of total home usage of NIH sites. MEDLINEplus accounts for about half of NLM's home usage, and is about equal the home usage level of MEDLINE/PubMed. The efforts of the NLM to keep the public informed have not stopped with MEDLINEplus:

- In February 2000, in cooperation with the NIH institutes, a new Web-based database, ClinicalTrials.gov, was launched. The catalyst for this site was a 1997 law that required a registry for both federally and privately funded clinical trials for serious diseases or conditions (*Section 113, “Information Program on Clinical Trials for Serious or Life-Threatening Diseases,” Food and Drug Administration Modernization Act of 1997, Public Law 105-115*). Currently, more than 5,200 federal and private medical studies, in 50,000 locations, are listed in ClinicalTrials.gov.
- NLM is actively exploring the use of new information technologies to enable patients with chronic disease to manage their disease and avoid or delay the onset of costly and debilitating complications, especially patients from minority and medically underserved populations. In a related area, the National Heart Attack Alert program is exploring ways that medical informatics can help prevent heart attack in at risk populations.
- Minority communities are at higher risk for environmental hazards. NLM works through Historically Black Colleges and Universities (HBCUs) to provide access to information about toxicology, environmental health, and hazardous wastes. This work was highlighted as one of the model training initiatives in the HHS Strategic Elements for Environmental Justice. To further extend the impact of this effort and to address the concerns about health disparities that may be associated with race, socioeconomic status, and environmental factors, this effort is being expanded from the HBCUs to include more broadly members of minority and low socioeconomic communities.
- Over the last 3 years, NLM has supported a total of 21 individual projects as part of its Tribal Connections program, with an emphasis on providing the necessary training (including train-the-trainer where possible) so that rural, underserved, and at risk Indian populations can have effective access to health information on the web. These efforts could be expanded to include other ethnic groups such as Pacific Islanders, Alaska natives, and Hispanics.

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