National Heart, Lung, and Blood Institute (NHLBI)
Strategy for Addressing Health Disparities

MISSION OF THE NHLBI

The mission of the NHLBI is to provide leadership for a national program in diseases of the heart, blood vessels, lung, and blood; sleep disorders; and blood resources management. The Institute:

- Plans, conducts, fosters, and supports an integrated and coordinated program of basic research, clinical investigations and trials, observational studies, and demonstration and education projects related to the causes, prevention, diagnosis, and treatment of heart, blood vessel, lung, and blood diseases and sleep disorders conducted in its own laboratories and by other scientific institutions and individuals supported by research grants and contracts.
- Plans and directs research in development, trial, and evaluation of interventions and devices related to prevention of diseases and the treatment and rehabilitation of patients suffering from such diseases and disorders.
- Conducts research on clinical use of blood and all aspects of the management of blood resources.
- Supports career training and development of new and established researchers in fundamental sciences and clinical disciplines to enable them to conduct basic and clinical research related to heart, blood vessel, lung, and blood diseases; sleep disorders; and blood resources through individual and institutional research training awards and career development awards.
- Coordinates relevant activities with other research institutes and all Federal health programs in the above areas, including the causes of stroke.
- Conducts educational activities, including development and dissemination of materials for health professionals and the public in the above areas, with emphasis on prevention.
- Maintains continuing relationships with institutions and professional associations, and with international, national, state, and local officials as well as voluntary agencies and organizations working in the above areas.
- Oversees management of the Women's Health Initiative.

OVERVIEW OF STRATEGY FOR ADDRESSING HEALTH DISPARITIES

Throughout its history, the NHLBI has been a leader in conducting and supporting research to alleviate the health disparities that exist between various segments of the U.S. population, and its outstanding efforts in this area have been publicly recognized in Congressional hearings. Projects with a strong minority component have been initiated so that comparisons may be made between various populations. These projects have produced a wealth of information that enable identification of health disparities and provide clues about their causes.

In addition, research programs that focus exclusively on minority health issues have been given high priority. They address diseases, conditions, and risk factors that disproportionately affect minorities, including high blood pressure, coronary heart disease, obesity, physical inactivity, diabetes, asthma, sarcoidosis, tuberculosis, sickle cell disease, and Cooley's anemia.

Through its outreach and education programs, the NHLBI disseminates health-related information to physicians, health care professionals, patients, and the general public. Strong emphasis is placed on outreach to minority populations using culturally sensitive, innovative approaches, such as church-based interventions to reach a large segment of the black community.

The NHLBI actively recruits minority individuals into its training and career development programs with particular emphasis on members of racial/ethnic groups that are currently underrepresented in the research enterprise.

Since FY 1991, the Institute has had procedures in place to ensure full compliance with the NIH Policy on Inclusion of Minorities and Women in Research. As a result, all NHLBI-supported research that involves human subjects includes minorities, with the exception of a very few projects for which a strong justification for limiting the diversity of the study population exists.

AREAS OF EMPHASIS

The NHLBI has identified three Areas of Emphasis for addressing health disparities: (1) Research, (2) Research Workforce and Research Resources, and (3) Outreach and Education. The three Areas of Emphasis, components of a coordinated and interdependent effort to reduce and eliminate health disparities, are of equal priority in the plan.

Discussions with representatives of the scientific community, healthcare-related organizations, and the general public are an integral part of the NHLBI planning process in all areas of emphasis. As an initial step in developing new initiatives, the NHLBI holds working groups and workshops to assess the needs and opportunities in a research area. The Institute's Board of Extramural Advisors (BEA) and the National Heart, Lung, and Blood Advisory Council (NHLBAC) provide continual guidance and review. (The BEA is a working group of the Council, consisting of scientists of significant stature in the cardiovascular, lung, blood, and sleep research communities, that is charged with evaluating the NHLBI research and training portfolios on an ongoing basis.) New initiatives and ongoing programs are discussed with public interest organizations at annual meetings; in addition, the *FYI from the NHLBI*, a collection of articles and information produced three times a year in response to the needs expressed by public interest organizations, includes a “constituents’ corner” where input from the public is welcomed.

I. Research

Some diseases of the heart, lung, and blood occur primarily in minorities; other diseases develop, progress, and react to treatment differently in minorities than in whites. For example, sickle cell disease (SCD) affects approximately 72,000 people in the U.S., most of whom trace their ancestry to Africa. The disease occurs in about 1 of every 500 black births. Tremendous progress has been made since NHLBI-supported research programs began about 30 years ago. Patients with sickle cell anemia now live longer on average; and care is more coordinated, beginning with screening of newborns, provision of appropriate control of infections, and prevention of stroke in high-risk children through transfusion therapy. Yet no universal cures are currently available. For example, the drug hydroxyurea, that reduces the rate of painful crises in SCD, is effective in only 2/3 of patients, and is largely ineffective for the related disease, Cooley's anemia. Continued progress can be expected from further studies in areas of ongoing research, such as bone marrow transplantation in children with SCD, expansion of use of hydroxyurea from adults to children, and long-term management of children with SCD who are receiving chronic transfusions.

In several other major disease areas under the purview of the NHLBI, certain racial/ethnic minority groups are disproportionately affected. A major example is cardiovascular disease (CVD) and its risk factors. Recent data show that heart disease mortality is 20 percent higher in black males than in white males and 31 percent higher in black females than in white females, and the prevalence of stroke is higher in blacks than in whites at all ages. High blood pressure, a risk factor for CVD, tends to be more common, develops at an earlier age, and is more severe for blacks than whites in the U.S. Two other risk factors for CVD-- of physical activity and obesity-- particularly problematic for minority populations.

Asthma is a chronic lung condition that disproportionately affects children, minorities, and low-income individuals. New data show continuing increases in asthma-related hospitalizations, emergency department visits, and deaths, especially among minority populations. Since 1979-82, the average age-adjusted asthma death rate for blacks has increased 71 percent compared to 41 percent for whites, and in 1995-1998, it was almost three times that of whites. In 1997-99, hospitalization rates were more than three times higher for blacks than for whites. The cost of asthma in 2000 was estimated to be $12.7 billion, with direct costs amounting to $8.1 billion and lost earnings due to illness and death totaling $4.6 billion.

Minority and lower socioeconomic populations encounter multiple barriers (e.g., financial constraints, logistical and cultural barriers, and environmental stressors) when attempting to follow health and treatment recommendations. Development of effective interventions for improving adherence to medical and lifestyle regimens for these underserved groups is needed so that the full benefits of medical advances in the treatment of heart, lung, and blood diseases and sleep disorders can be realized for all segments of the U.S. population.

Objectives:

The NHLBI has identified three main objectives within the Research area of emphasis:

- Support research to increase understanding of the development and progression of heart, lung, and blood diseases and sleep disorders that contribute to health disparities.
- Support research to develop new or improved approaches for diagnosing and treating heart, lung, and blood diseases and sleep disorders that contribute to health disparities.
- Support research to develop new or improved approaches for preventing or delaying the onset or progression of heart, lung, and blood diseases and sleep disorders that contribute to health disparities.

The three objectives are of equal priority.

The process for taking public comments into account in developing these objectives is the same as the process described above for developing areas of emphasis.

A. Support research to increase understanding of the development and progression of heart, lung, and blood diseases and sleep disorders that contribute to health disparities.

Emphasis is on identifying genetic and environmental factors that influence development and progression of diseases that disproportionately affect minorities; determining mechanisms responsible for the progression of such diseases; and clarifying processes by which environmental, developmental, and psychosocial factors early in life contribute to health disparities later in life.

Action Plan:

(1) Steps to Achieve Objective

The NHLBI will continue to support ongoing research programs that address this objective. In addition, as applications for research that focus on this objective are received, and as new initiatives are developed, additional research grants will be awarded.

Current Major Programs

Epidemiological Studies

Multi-Ethnic Study of Atherosclerosis: Investigates the prevalence, correlates, and progression of subclinical cardiovascular disease (i.e., disease detected noninvasively before it has produced clinical signs and symptoms), in a population consisting of 40 percent whites, 30 percent blacks, 20 percent Hispanics, and 10 percent Asians.

Early Natural History of Arteriosclerosis: Examines the association between risk factor development and the evolution of atherosclerosis and hypertension in a childhood population that has now reached adulthood; 36 percent of the participants are black.

Coronary Artery Risk Development in Young Adults (CARDIA): Determines the evolution of coronary heart disease (CHD) risk factors and subclinical atherosclerosis in young adults; 50 percent of the participants are black.

Atherosclerosis Risk in Communities (ARIC): Investigates the association of CHD risk factors with development of atherosclerosis in an adult population; 27 percent of the participants are black.

Cardiovascular Health Study (CHS): Examines risk factors for CHD and stroke in the elderly; 15 percent of the participants are black.

Strong Heart Study: Compares risk factor levels and morbidity and mortality from cardiovascular disease (CVD) among American Indians in three different geographic locations.

Genetics of Coronary Artery Disease in Alaskan Natives (GOCADAN): Documents CVD and CVD risk factors in approximately 40 extended families (family members from villages in Northern Alaska).

Jackson Heart Study: Identifies environmental and genetic factors influencing the evolution and progression of CVD in blacks.

National Longitudinal Mortality Study (NLMS) - Follow-up: Analyzes socioeconomic, demographic, and occupational differences in mortality in the U.S. among 1.4 million people.

High Blood Pressure

Molecular Genetics of Hypertension: Determines the etiology and pathogenesis of hypertension in order to improve diagnosis and treatment of the disease. Among the basic and clinical subprojects is one that targets blacks exclusively.

Family Blood Pressure Program: Establishes a collaborative network to identify major genes associated with high blood pressure; 66 percent of the participants are minority.

Ischemic Heart Disease

Specialized Centers of Research (SCOR) on Ischemic Heart Disease in Blacks: Elucidates the pathophysiological basis for excess morbidity and mortality from ischemic heart disease in blacks, and subsequently develops therapeutic strategies to address these problems.

Diabetes

Glucose Tolerance and Risk for Cardiovascular Disease in the Elderly: Examines the longitudinal relationship between impaired glucose tolerance, insulin resistance, CVD risk factors, and CVD among Japanese American men.

Insulin Resistance and Atherosclerosis Study (IRAS) Family Study: Identifies the genetic determinants of insulin resistance and visceral adiposity and determines the extent to which insulin resistance, visceral adiposity, and metabolic cardiovascular disease risk factors share common genetic influences; participants are black and Hispanic.

Asthma

Collaborative Studies on the Genetics of Asthma: Seeks to identify genes associated with asthma and to elucidate their functional role in the development of the disorder; 58 percent of the participants are minority**.**

New Initiatives

Genetic Modifiers of Single Gene Defect Diseases: Identify and characterize the modifier genes responsible for variation in clinical progression and outcome of sickle cell disease and other heart, lung, and blood diseases due to single-gene defects.

Susceptibility to Target Organ Damage in High Blood Pressure: Identify genetic and other biological factors that increase the susceptibility to hypertension-related injury and damage to target organs. Explore differences in prevalence and disease intensity among different ethnic groups.

Severe Asthma Research Program: Establish a collaborative program to investigate the mechanistic basis for severe asthma and how it differs from mild-to-moderate asthma.

Genetic Aspects of Tuberculosis in the Lung: Investigate the genetic aspects of tuberculosis, using advances in molecular biology and genomics research.

(2) Timeline for Objective

Current Major Programs	**Renewal Likely**
Expected end date of 2002:	
Early Natural History of Arteriosclerosis	Yes
Glucose Tolerance and Risk for Cardiovascular Disease in the Elderly	Yes
Collaborative Studies on the Genetics of Asthma	Yes

Expected end date of 2003:	
Coronary Artery Risk Development in Young Adults (CARDIA)	Yes
Expected end date of 2004:	
National Longitudinal Mortality Study (NLMS) - Follow up	Yes
Insulin Resistance and Atherosclerosis Study (IRAS) Family Study	Yes
Expected end date of 2005:	
Cardiovascular Health Study	Yes
Strong Heart Study	Yes
Genetics of Coronary Artery Disease in Alaskan Natives	Yes
Jackson Heart Study	Yes
Molecular Genetics of Hypertension	No
Family Blood Pressure Program	Yes
SCOR on Ischemic Heart Disease in Blacks	No
Expected end date of 2006 or beyond:	
Multi-Ethnic Study of Atherosclerosis (MESA)	No
Atherosclerosis Risk in Communities (ARIC)	No
New Initiatives	
Expected end date of 2004:	
Susceptibility to Target Organ Damage in High Blood Pressure	
Expected end date of 2005:	
Severe Asthma Research Program	
Genetic Aspects of Tuberculosis in the Lung	
Genetic Modifiers of Single Gene Defect Diseases	

(3) This objective is ongoing. See previous section for dates by which specific activities within this objective are expected to be completed. The "Renewal Likely" column (in

previous section) indicates if an activity is expected to be renewed at the completion of its current award period.

Performance Measures:

To assess performance of the NHLBI portfolio of current activities that "support research to increase understanding of the development and progression of heart, lung, and blood diseases and sleep disorders that contribute to health disparities," NHLBI scientific staff track and assess the success of Institute-supported investigators in publishing articles related to this objective in peer-reviewed, high-quality scientific journals. Another measure of the performance of ongoing research is whether the grant is renewed once its initial period of support ends. Applications for competing renewal grants are reviewed carefully by peer reviewers and the National Heart, Lung, and Blood Advisory Council for past performance and published results, as well as future potential.

In addition, the NHLBI portfolio is assessed frequently to ensure that it addresses newly identified scientific needs and opportunities. New initiatives are developed with input from the scientific and healthcare-related communities and the general public, and reviewed by the Institute's Board of Extramural Advisors and the National Heart, Lung, and Blood Advisory Council before being announced.

Outcome Measures:

A measure of the outcome of NHLBI-supported activities to "support research to increase understanding of the development and progression of heart, lung, and blood diseases and sleep disorders that contribute to health disparities" is the publication in peer-reviewed, high-quality scientific journals of articles reporting science advances based on the results of NHLBI-supported research toward this objective. NHLBI scientific staff continually assess Institute objectives and research programs in terms of the results reported in such articles. In fact, as part of its annual submission to the NIH Government Performance and Review Act (GPRA) report, the NHLBI has consistently included several journal articles that report science advances pertaining to this objective based on Institute-supported research. For example, in an article published in the *American Journal of Human Genetics* in 2001 and recently submitted to the NIH GPRA report, NHLBI-supported researchers reported identifying a link between ethnicity and "asthma genes." In another article published in the *Proceedings of the National Academy of Science* in 2000 and also submitted to the NIH GPRA report, researchers reported a possible explanation for the high levels of hypertension found in blacks in the U.S.

B. Develop new or improved approaches for diagnosing and treating heart, lung, and blood diseases and sleep disorders that contribute to health disparities.

Emphasis is placed on understanding differences in disease presentation in subsegments of the population; achieving accurate and timely diagnosis of diseases; predicting the likely clinical

course of disease in individuals; establishing the effectiveness, safety, and cost-effectiveness of treatments; and identifying and overcoming barriers to full utilization of existing knowledge about proven therapies.

Action Plan:

(1) Steps to Achieve Objective

The NHLBI will continue to support ongoing research programs that address this objective. In addition, as new initiatives are developed that focus on this objective, additional research grants will be awarded.

Current Major Programs

High Blood Pressure

Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT): Compares the combined incidence of fatal CHD and nonfatal myocardial infarction (MI) among patients receiving angiotensin converting enzyme (ACE) inhibitors, calcium antagonists, or alpha-1-blockers and patients in a control group receiving a diuretic, and in a subset, determines whether cholesterol-lowering therapy reduces all-cause mortality in moderately hypercholesterolemic individuals compared with a control group; 32 percent of the participants are black and 19 percent are Hispanic.

PREMIER: Lifestyle Interventions for Blood Pressure Control: Compares the effectiveness of two multicomponent lifestyle interventions (reduced salt intake, increase physical activity, moderation of alcohol intake, and weight loss)--where one of the interventions also includes the DASH diet--on blood pressure control; 40 percent of the participants are black.

Coronary Heart Disease

Enhancing Recovery in Coronary Heart Disease (ENRICHD): Determines the effects of psychosocial interventions on morbidity and mortality in post-MI patients who are depressed and socially isolated, and/or who perceive themselves as lacking support from family and friends; 35 percent of the participants are minority.

Diabetes

Action to Control Cardiovascular Risk in Diabetes (ACCORD): Evaluates the benefits of different therapies to reduce cardiovascular complications in Type 2 diabetes; 33 percent of the participants are minority.

Bypass Angioplasty Revascularization Investigation in Type 2 Diabetics (BARI 2D): Evaluates various treatments for Type 2 diabetic patients with angiographically proven coronary artery disease and stable angina or ischemia; 20 percent of the participants are minority

Asthma

Asthma Clinical Research Network: Establishes an interactive network of asthma clinical research groups to conduct studies of novel therapies for asthma and disseminate findings to the practicing community. The sites include Harlem Hospital, which serves a predominately minority population.

Childhood Asthma Management Program (CAMP): Evaluates the long-term effects of regular use of either of two types of anti-inflammatory medications on lung growth and development, physical growth and development, and asthma outcomes in asthmatic children; 26 percent of the participants are minority.

Childhood Asthma Research and Education Network (CARE): Establishes an interactive network of clinical research groups to evaluate current and novel therapies and management strategies for children with asthma. Investigators will recruit a large minority population into the program.

Sickle Cell Disease

Comprehensive Sickle Cell Centers Program: Supports coordination of resources, facilities, and personnel to expedite development and application of new knowledge for improved diagnosis and treatment of sickle cell disease and prevention of its complications. In the 2003-2008 funding cycle, the program will include, for the first time, a clinical research network component to provide for rapid evaluation of promising new treatments for sickle cell disease.

Pediatric Hydroxyurea Phase III Clinical Trial (BABY HUG): Evaluates the efficacy and safety of hydroxyurea treatment in infants with sickle cell disease.

Cooley's Anemia

Thalassemia (Cooley's Anemia) Clinical Research Network: Accelerates research in the management of thalassemia, standardizes existing treatments, and evaluates new ones in a network of clinical centers. Emphasis is on clinical trials that help identify optimal therapy.

New Initiatives

Overcoming Barriers to Treatment Adherence in Minorities and Persons Living in Poverty: Target clinical care settings to evaluate interventions to improve adherence to medically

prescribed lifestyles and regimens used to treat heart, lung, blood or sleep diseases, disorders or conditions, cancer, or diabetes. The populations targeted are racial and ethnic minorities and/or persons living in poverty.

Transactivation of Fetal Hemoglobin Genes for Treatment of Sickle Cell Disease and Cooley's Anemia: Identify transactivator proteins that regulate the expression of fetal globin chains.

Trials Assessing Innovative Strategies to Improve Clinical Practice through Guidelines: Investigate reasons for inadequate use of standard clinical practice guidelines for heart, lung, and blood diseases, particularly in treatment for racial and ethnic minorities, women, and the elderly; evaluate remedial interventions.

Chemical Screens for New Inducers of Fetal Hemoglobin for Treatment of Sickle Cell Disease and Cooley's Anemia: Develop better drugs to treat sickle cell disease and Cooley's Anemia. (SBIR)

(2) Timeline for Objective

Current Major Programs	**Renewal Likely**
Expected end date of 2003:	
Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT)	No
PREMIER: Lifestyle Interventions for Blood Pressure Control	No
Enhancing Recovery in Coronary Heart Disease (ENRICHD)	No
Asthma Clinical Research Network	Yes
Comprehensive Sickle Cell Centers Program	Yes
Expected end date of 2004:	
Childhood Asthma Management Program (CAMP)	No
Childhood Asthma Research and Education Network (CARE)	Yes
Expected end date of 2005:	
Thalassemia (Cooley's Anemia) Clinical Research Network	Yes

Expected end date of 2006 or beyond:

Action to Control Cardiovascular Risk in Diabetes (ACCORD)	No
Bypass Angioplasty Revascularization Investigation in Type 2 Diabetics (BARI 2D)	No
Pediatric Hydroxyurea Phase III Clinical Trial (BABY HUG)	No

New Initiatives

Expected end date of 2004:

Overcoming Barriers to Treatment Adherence in Minorities and Persons Living in Poverty

Transactivation of Fetal Hemoglobin Genes for Treatment of Sickle Cell Disease and Cooley's Anemia

Expected end date of 2006:

Trials Assessing Innovative Strategies to Improve Clinical Practice through Guidelines

SBIR (no specific expected end date):

Chemical Screens for New Inducers of Fetal Hemoglobin for Treatment of Sickle Cell Disease and Cooley's Anemia

(3) This objective is ongoing. See previous section for dates by which specific activities within this objective are expected to be completed. The "Renewal Likely" column (in previous section) indicates if an activity is expected to be renewed at the completion of its current award period.

Performance Measures:

To assess performance of the NHLBI portfolio of current activities that "support research to develop new or improved approaches for diagnosing and treating heart, lung, and blood diseases and sleep disorders that contribute to health disparities," NHLBI scientific staff track and assess the success of Institute-supported investigators in publishing articles related to this objective in peer-reviewed, high-quality scientific journals. Another measure of the performance of ongoing research is whether the grant is renewed once its initial period of support ends. Applications for competing renewal grants are reviewed carefully by peer reviewers and the National Heart, Lung, and Blood Advisory Council for past performance and published results, as well as future potential.

In addition, the NHLBI portfolio is assessed frequently to ensure that it addresses newly identified scientific needs and opportunities. New initiatives are developed with input from

the scientific and healthcare-related communities and the general public, and reviewed by the Institute's Board of Extramural Advisors and the National Heart, Lung, and Blood Advisory Council before being announced.

Outcome Measures:

A measure of the outcome of NHLBI-supported activities to "support research to develop new or improved approaches for diagnosing and treating heart, lung, and blood diseases and sleep disorders that contribute to health disparities" is the publication in peer-reviewed, high-quality scientific journals of articles reporting science advances based on the results of NHLBI-supported research toward this objective. NHLBI scientific staff continually assess Institute objectives and research programs in terms of the results reported in such articles. In fact, as part of its annual submission to the NIH Government Performance and Review Act (GPRA) report, the NHLBI has consistently included several journal articles that report science advances pertaining to this objective based on Institute-supported research. For example, in an article recently published in the *New England Journal of Medicine* and submitted to the NIH GPRA report, NHLBI-supported researchers reported results showing inhaled corticosteroids to be safe and effective for children with asthma. In another article recently published in the *British Journal of Haematology* and also submitted to the NIH GPRA report, investigators reported that arginine supplements may benefit patients with sickle cell disease.

C. Develop new or improved approaches for preventing or delaying the onset or progression of heart, lung, and blood diseases and sleep disorders that contribute to health disparities.

Abundant evidence exists that many diseases can be forestalled or prevented entirely through appropriate medical regimens (e.g., blood pressure control, cholesterol lowering) or through healthy lifestyles (e.g., prudent diet, abstinence from smoking, physical activity). Research is needed to identify and test approaches that can be used successfully in minority populations.

Action Plan:

(1) Steps to Achieve Objective

The NHLBI will continue to support ongoing research programs that address this objective. In addition, as new initiatives are developed that focus on this objective, additional research grants will be awarded.

Current Major Programs

Girls Health Enrichment Multi-Site Studies (GEMS): Tests effectiveness of weight-control interventions (involving diet, physical activity, and psychosocial and familial influences)

administered during the critical transition period from prepuberty to puberty in black girls at high risk for obesity.

Intervention to Improve Asthma Management and Prevention at School: Develops and evaluates innovative programs to ensure optimal asthma management and prevention at school; 90 percent of the participants are black

Tuberculosis Academic Award: Seeks to improve prevention, management, and control of TB by increasing opportunities for health-care practitioners to learn modern principles and practices by promoting coordinated clinical approaches to the care of patients of various ethnic groups who have TB; raising awareness among health-care providers of unique ethnic, cultural, and socioeconomic dimensions of TB; focusing educational efforts in areas where TB incidence is persistently high (e.g., immigrant communities, refugee centers, homeless shelters, correctional facilities); promoting development of minority faculty capable of providing appropriate instruction in diagnosis and management of TB; and enhancing TB education programs in minority medical schools and in the communities they serve.

Trial of Activity for Adolescent Girls (TAAG): Tests the effectiveness of a coordinated school and community-based multicomponent intervention that provides skills-building, supportive environments, and opportunities for participation in physical activity during and outside of the school day to prevent the decline in physical activity levels and cardiopulmonary fitness of middle-school-aged girls from a wide range of racial/ethnic/socioeconomic backgrounds.

Nutrient Database for American Indian and Alaska Native Foods: Establishes a set of comprehensive, high quality databases on the nutrient content of traditional foods and other foods commonly eaten by American Indians and Alaska Natives.

New Initiative

Centers for Reducing Asthma Disparities: Establish cooperative centers of research to study asthma disparities in relation to prevalence, emergency department use, hospitalizations, and mortality between the general white population and minority and economically disadvantaged populations.

(2) Timeline for Objective

Current Major Programs	**Renewal Likely**
Expected end date of 2002:	
Girls Health Enrichment Multi-Site Studies (GEMS)	No
Intervention to Improve Asthma Management and Prevention at School	No

Expected end date of 2004:

Nutrient Database for American Indian and Alaska Native Foods	No

Expected end date of 2006 or beyond:

Tuberculosis Academic Award	Yes
Trial of Activity for Adolescent Girls (TAAG)	No

New Initiative

Expected end date of 2006:

Centers for Reducing Asthma Disparities

(3) This objective is ongoing. See previous section for dates by which specific activities within this objective are expected to be completed. The "Renewal Likely" column (in previous section) indicates if an activity is expected to be renewed at the completion of its current award period.

Performance Measures:

To assess performance of the NHLBI portfolio of current activities that "support research to develop new or improved approaches for preventing or delaying the onset or progression of heart, lung, and blood diseases and sleep disorders that contribute to health disparities," NHLBI scientific staff track and assess the success of Institute-supported investigators in publishing articles related to this objective in peer-reviewed, high-quality scientific journals. Another measure of the performance of ongoing research is whether the grant is renewed once its initial period of support ends. Applications for competing renewal grants are reviewed carefully by peer reviewers and the National Heart, Lung, and Blood Advisory Council for past performance and published results, as well as future potential.

In addition, the NHLBI portfolio is assessed frequently to ensure that it addresses newly identified scientific needs and opportunities. New initiatives are developed with input from the scientific and healthcare-related communities and the general public, and reviewed by the Institute's Board of Extramural Advisors and the National Heart, Lung, and Blood Advisory Council before being announced.

Outcome Measures:

A measure of the outcome of NHLBI-supported activities to "support research to develop new or improved approaches for proventing or delaying the onset or progression of heart, lung, and blood diseases and sleep disorders that contribute to health disparities is the publication in peer-reviewed, high-quality scientific journals of articles reporting science

advances based on the results of NHLBI-supported research toward this objective. NHLBI scientific staff continually assess Institute objectives and research programs in terms of the results reported in such articles. In fact, as part of its annual submission to the NIH Government Performance and Review Act (GPRA) report, the NHLBI has consistently included several journal articles that report science advances pertaining to this objective based on Institute-supported research. For example, in an article appearing in *The Lancet* and submitted to the NIH GPRA report, researchers present findings that suggest that exposure to allergens early in life may prevent a lifetime of allergic asthma, a finding that argues against current theories. In another article published in *Blood* in 2000 and also submitted to the NIH GPRA report, researchers reported finding that elevated levels of a certain enzyme in the blood are associated with development of pulmonary complications from sickle cell disease. If these results are confirmed by larger clinical trials, enzyme measurements could be used to identify patients with impending pulmonary complications, thereby allowing treatment to be initiated before the complications develop.

II. Research Workforce and Research Resources

For many years, the NHLBI has been particularly concerned with increasing the participation of minority individuals in biomedical research careers. Continuing development of research workforce and research resources remains a high priority with the NHLBI. The Institute adheres to the premise that increasing the number of highly trained minority individuals whose basic or clinical research interests are in cardiovascular, lung, and blood diseases and sleep disorders and improving the research infrastructure at minority institutions are crucial elements in eliminating health disparities.

These activities are extremely important to the elimination of health disparities because it has been demonstrated that participation of minority investigators in the biomedical research enterprise has several positive effects: it improves the recruitment and retention rates of minorities in population-based research studies; it encourages more minority students to pursue careers in the biomedical and behavioral sciences because they have role models and potential mentors with whom they can identify; it improves access to health care because minority clinicians tend to establish practices in minority communities; and it adds to the body of knowledge about diseases that have a disproportionate impact on minorities, because minority investigators tend to pursue research related to minority populations.

Objective:

Expand the opportunities in research training and career development for underrepresented minorities.

The NHLBI emphasizes increasing the number of highly trained minority investigators through support of a range of programs designed to help investigators develop research careers. The general aim of these programs is to help minority investigators develop research careers through participation in research relevant to the institute's mission and through a process of mentoring by

established investigators. The NHLBI also fosters collaborative partnerships between research-intensive and minority-serving institutions.

Action Plan:

(1) Steps to Achieve Objective

Current Major Programs

Historically Black Colleges and Universities (HBCU) Research Scientist Award: Provides an opportunity for HBCUs offering the master's, Ph.D., or professional degrees to recruit established scientists to help expand their research base and to train students in and expose them to the latest scientific advances. The NHLBI will offer the *Research Scientist Award for Minority Institutions* in FY 2002 to extend this award to all institutions with a student enrollment that is greater than 50 percent members of cultural or racial minority groups.

NHLBI Mentored Development Award for Minority Faculty: Provides support to underrepresented minority faculty members, with varying levels of research experience, to prepare them for research careers in cardiovascular, pulmonary, hematologic, and sleep disorders.

Biomedical Research Training Program for Underrepresented Minorities: Provides minority undergraduate, graduate, and health professional students majoring in the life sciences an opportunity to receive training in the NHLBI intramural laboratories.

NHLBI Minority Institution Research Scientist Development Award: Provides research support to faculty members at minority institutions who have the interest and potential to conduct high-quality research in the areas of cardiovascular, pulmonary, hematologic, and sleep disorders; enhances the institution's science infrastructure; and provides "hands-on" research opportunities for minority students enrolled at the applicant institutions.

NHLBI Minority Institutional Research Training Program: Supports training of graduate and health professional students and individuals in postdoctoral training at minority schools who have the potential to develop meritorious training programs in cardiovascular, pulmonary, hematologic, and sleep disorders.

NHLBI MARC Summer Research Training Program: Offers honor students participating in the Minority Access to Research Careers Undergraduate Student Training in Academic Research (MARC U*STAR) program a 10-week summer research experience in the NHLBI intramural laboratories.

Short-term Training for Minority Students Program: Provides short-term research support to underrepresented minority undergraduate and graduate students and students in health

professional schools to expose them to career opportunities in cardiovascular, pulmonary, hematologic, and sleep disorders research.

Research Supplements for Underrepresented Minorities (NIH wide): Provides support for research experiences for minorities throughout the continuum from high school to the faculty level to increase the number of underrepresented minority scientists participating in biomedical research and the health related sciences and to establish a diversified workforce.

Minority Biomedical Research Support Program (NIH wide): Offers opportunities for underrepresented minority undergraduate and graduate students to receive training in fundamental biomedical sciences and clinical research disciplines in order to enhance career opportunities in biomedical research, including clinical and laboratory medicine, epidemiology, and biostatistics as applied to the etiology and treatment of heart, blood vessel, lung, and blood health and diseases, and sleep disorders.

New Initiative

Minority Undergraduate Biomedical Education Program: Supports the development of pilot programs that will encourage minority institutions to recruit and retain talented undergraduate students into the biomedical and behavioral sciences.

(2) Timeline for Objective

Current Major Programs

Expected end date of 2006 or beyond (ongoing programs - renewal likely):

HBCU Research Scientist Award / Research Scientist Award for Minority Institutions

NHLBI Mentored Development Award for Minority Faculty

Biomedical Research Training Program for Underrepresented Minorities

NHLBI Minority Institution Research Scientist Development Award

NHLBI Minority Institutional Research Training Program

NHLBI MARC Summer Research Training Program

Short-Term Training for Minority Students Program

Research Supplements for Underrepresented Minorities (NIH wide)

Minority Biomedical Research Support Program (NIH wide)

New Initiative

Expected end date of 2005:

Minority Undergraduate Biomedical Education Program

(3) This objective is an ongoing effort by the NHLBI that is being addressed through the programs listed.

Performance Measures:

The NHLBI has consistently, over the years, increased its funding commitment for these programs and continues to add new programs. The Institute closely scrutinizes the programs to ensure that institutions and mentors alike meet the needs of minority investigators thereby providing minority researchers with opportunities to further their scientific training and achieve their research career goals. Applications to these programs are carefully evaluated to make sure the proposed training meets the needs of the minority trainee and the Institute. Only those applications considered to be of sufficiently high enough quality to provide an exceptional training experience are considered. In addition, the NHLBI takes into account an institution's or mentor's track record of providing a positive training experience when considering whether to make an award.

Outcome Measures:

The number of minority investigators participating in these NHLBI-sponsored training opportunities continues to increase. The NHLBI has also added new programs that have expanded the opportunities for underrepresented minorities to develop a career in the biomedical sciences. The Institute also continues to measure the progress of training experiences through required progress reports. While the true outcome of these programs may not be fully appreciated for years, already it is evident that an increasing number of underrepresented minority individuals are using these programs to help build their careers in biomedical research, often by entering a program while undergraduates and receiving training up into the doctoral, postdoctoral, and investigator levels of research.

III. Outreach and Education

A major feature of the NHLBI's efforts to increase the quality and years of Americans' healthy life and to end racial and ethnic disparities in the burden of disease is the use of outreach and education. The NHLBI understands that a key factor to achieving better health is access to information, especially relevant, culturally sensitive materials that aid individuals in making healthy choices. The Institute's interest in this area encompasses not only the behavior of patients and the general public, but also the behavior of health care providers who dispense advice and prescribe medications.

Objective:

Expand and strengthen our programs of outreach and education for minority populations.

National education programs of the NHLBI have been very successful in increasing public awareness and control of hypertension and high blood cholesterol, for example. However, further progress is still needed, especially in certain vulnerable subsets of the population. To address this issue, the NHLBI recently established Enhanced Dissemination and Utilization Centers (EDUCs) as a means of extending the health benefits associated with current clinical guidelines and medical information. Six EDUCs have been established in communities at high risk for cardiovascular disease. They are using information generated by the Institute's education programs to inform their communities of the public health burdens of cardiovascular disease and to develop, implement, and evaluate educational strategies to reduce the burden. The Institute believes this new approach will provide a solid foundation for our efforts to address Healthy People 2010 performance objectives of eliminating racial/ethnic and geographic disparities in underserved high-risk populations.

Action Plan:

(1) Steps to Achieve Objective

Current Major Programs

Salud para su Corazón: This project is dedicated to improving cardiovascular health among Hispanics. It has developed a wide variety of materials that provide a rich source of information on heart-health interventions for consumers, program planners, community leaders, and lay health workers. Through partnerships and collaborations, this program educates local communities in linguistically and culturally appropriate ways.

Strengthening the Heartbeat of American Indian/Alaska Native Communities: This project is developing culturally appropriate materials to encourage behavior changes that will improve cardiovascular health in native American populations, working collaboratively with the Indian Health Service and local tribal communities, villages, and pueblos.

Asian American and Pacific Islander (AAPI) ASPIRE Project: This project is a cardiovascular community outreach program for Asian Americans and Pacific Islanders (AAPIs). It has gained support and interest from community-based organizations, churches, and health centers in different parts of the country, as a result of national dissemination of two reports focusing on the toll of heart disease on AAPIs.

National Physicians' Network Project: This project provides continuing education opportunities and other information to clinicians and other health professionals who provide health care to blacks.

Keeping Hearts Alive: This project works with community organizations and leaders to promote cardiovascular health in blacks in Washington, D.C., and Baltimore, Maryland. NHLBI will develop educational materials aimed at black communities.

Cardiovascular Disease Enhanced Dissemination and Utilization Centers (EDUCs): The NHLBI has established a partnership with six community-based organizations (EDUCs) as part of a nationwide strategy to develop a network of partners to promote community-based cardiovascular health in high-risk populations**.** The six EDUCs are located in rural communities with heart disease and stroke death rates far in excess of the national average.

Asthma Coalition Network Awards: The National Asthma Education and Prevention Program (NAEPP) established a decade ago, is strongly committed to reducing and ultimately eliminating disparities in asthma preventive health care, diagnosis and treatment, and morbidity and mortality. In FY 2000, it awarded contracts to seven local asthma coalitions to implement interventions to improve asthma control in high-risk communities. These projects target low-socioeconomic strata, minority populations, and children who are disproportionately affected by asthma. They involve a number of strategic partnerships with a broad base of community groups, and use new information technologies to facilitate effective transfer of the current science base to practitioners.

Women's Heart Health Education Initiative: This health education effort aims to reduce death and disability from cardiovascular disease in women**.** The objectives of a recent planning workshop were to: 1) develop goals for the women's heart health education effort; 2) identify the primary target audiences; 3) identify the needs of minority target audiences who are at greater risk for cardiovascular disease; and 4) develop programmatic recommendations as well as methods for implementation and dissemination.

(2) Timeline for Objective

Current Major Programs	**Renewal Likely**
Expected end date of 2002:	
National Physicians' Network Project	Yes
Expected end date of 2003:	
Asthma Coalition Network Awards	Yes
Expected end date of 2004:	
Cardiovascular Disease Enhanced Dissemination and Utilization Centers (EDUCs)	Yes

Expected end date of 2006 or beyond:

Salud para su Corazón	Yes
Strengthening the Heartbeat of American Indian/Alaska Native Communities	Yes
Asian American and Pacific Islander (AAPI) ASPIRE Project	Yes
Keeping Hearts Alive	Yes
NHLBI Women's Heart Health Education Initiative	Yes

(3) The objective to improve and expand our outreach and education efforts directed toward underrepresented minorities is an ongoing effort.

Performance Measures:

The NHLBI consistently seeks to develop new ways to reach and educate the general public and to find appropriate ways to reach out to minority populations. The Institute frequently reviews the progress of its current outreach programs and works closely with its advisory council to develop and implement new programs. This process of evaluation, development, and review led to development of the new EDUCs program.

Although women's health issues have long been addressed by NHLBI national education programs, the Institute is developing a new initiative focused specifically on educating the public and health care professionals about women's heart health. The goal is to reduce death and disability in women by increasing awareness and dispelling misinformation about heart disease risk in women, improving the way health professionals detect and treat cardiovascular disease risk factors in women, reaching minority women who are at increased risk of developing cardiovascular disease, and motivating communities to make greater use of resources already available at the local level.

Another example of the NHLBI's commitment to evaluating community needs and developing relevant programs is creation of the "Star Sleeper" campaign, with Garfield, the comic strip cat, as a means to get the message out to elementary school children that a good night's rest is important to their health.

Outcome Measures:

The NHLBI points to the increased public awareness of the need to control hypertension and to lower blood cholesterol as evidence that its outreach programs are working, but the Institute understands that much more needs to be done. Clearly, the results of some of these programs may not be fully realized for years to come, since they are ongoing efforts to modify public behavior and attitudes related to health. The Institute remains committed to seek out new opportunities to get its message out to the public, and to develop new programs to meet the special needs of minorities in order to better alleviate health disparities.

NHLBI Health Disparities Budget
(Dollars in Millions)

	FY 2002			FY 2003		
Institute / Center	Research	Infrastructure	Outreach	Research	Infrastructure	Outreach
NHLBI	$208.00	$28.80	$3.20	$223.20	$30.20	$3.40