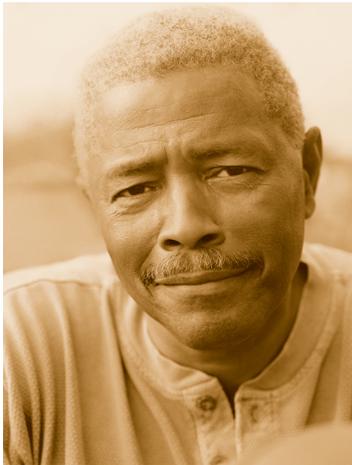




*California's Master Plan for
Heart Disease and Stroke
Prevention and Treatment*

2007-2015



California Heart Disease and Stroke Prevention and Treatment Task Force

California Department of Public Health

Acknowledgments

The California Heart Disease and Stroke Prevention and Treatment Task Force and its operations, including the drafting of *California's Master Plan for Heart Disease and Stroke Prevention and Treatment*, were supported by generous grants from the American Heart Association and Kaiser Permanente, and by an unrestricted educational grant from AstraZeneca.

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California Heart Disease and Stroke Prevention and Treatment Task Force

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November 2006

Dear Cardiovascular Health Partner,

Heart disease and stroke are the first and third leading causes of death in California and the nation. These diseases place tremendous physical, emotional, and financial burdens on the people of California and our communities. Although we do not have control over all of the causes of these complex and multifaceted diseases, we can work together to modify health behaviors and improve health care systems in our communities to prevent initiation and recurrence of disease, improve outcomes, and establish efficient and effective systems of cardiac and stroke care.

On behalf of the California Heart Disease and Stroke Prevention and Treatment Task Force, I am pleased to present *California's Master Plan for Heart Disease and Stroke Prevention and Treatment*. This plan is the culmination of many hours of hard work from a team of individuals dedicated to the promotion of cardiovascular health. It was developed to serve as a plan for *everyone* in the State. To effectively implement the plan set forth in the following pages, it is imperative that individuals and organizations throughout the State come together to work collaboratively to achieve our common goals. This plan focuses on prevention and quality of care; however, there are many contributing factors to the development of heart disease and stroke, all of which are important to address. We support the activities of existing programs dedicated to prevention efforts (physical activity, nutrition, obesity prevention, and smoking cessation) and offer ideas in our plan to work collaboratively with these programs.

Thank you, to my fellow Task Force members, for your hard work, efforts, dedication, and expertise. The operation of the Task Force and the development and production of this plan would not have been possible without the generous support of Kaiser Permanente, AstraZeneca, and the American Heart Association. We would also like to extend our appreciation to the California Heart Disease and Stroke Prevention (CHDSP) Program, California Department of Public Health. Without the support of the CHDSP Program staff, this plan would not have come to fruition.

I take this opportunity to invite and encourage you to use this plan as a guide in taking action to make positive changes in your communities to improve cardiovascular health throughout California. We look forward to your involvement and enthusiasm as we work together to fight the leading causes of death in our State.

Sincerely,

Ismael Nuño, M.D., F.A.C.S., F.A.C.C., F.A.C.C.P
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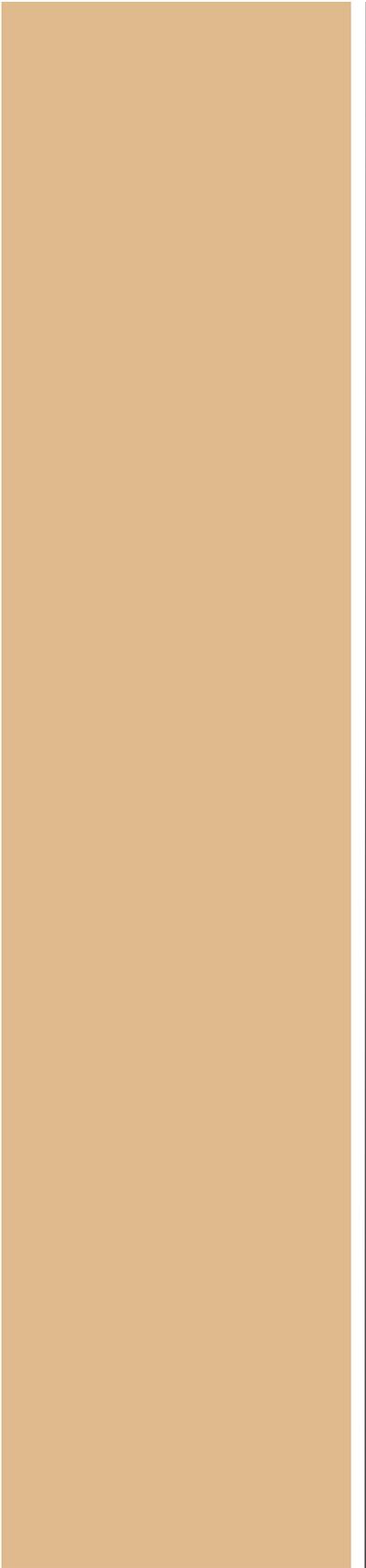
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MARK B HORTON, MD, MSPH
Director

State of California—Health and Human Services Agency
California Department of Public Health



ARNOLD SCHWARZENEGGER
Governor

Dear Partner in Health:

The California Department of Public Health (CDPH) congratulates the California Heart Disease and Stroke Prevention and Treatment Task Force (Task Force) on the development of *California's Master Plan for Heart Disease and Stroke Prevention and Treatment* (Master Plan). In addition, CDPH commends the many organizations and members of the public who provided input to the Task Force during the writing and review process. These early partners have demonstrated an interest and commitment that will be critical to the implementation of the Master Plan.

This Master Plan is comprehensive. It addresses the reduction of morbidity, mortality, and disability resulting from heart disease and stroke—conditions that claim the life of one Californian every seven-and-a-half minutes, on average. The importance of reducing this death toll cannot be overemphasized.

While much work has gone into the development of the Master Plan, the real work lies ahead. It will be up to public and private organizations across the State to commit to accomplishing those objectives in the Master Plan that fit their missions.

We invite you to review this Master Plan carefully with the intention of adopting and implementing one or more of the strategies proposed. Only through collaboration and coordination of our efforts will the potential of the Master Plan be realized. CDPH looks forward to working with you in this important fight against heart disease, stroke, and the risk factors for these diseases. Together, we can reduce the prevalence of heart disease and stroke, so they will no longer rank as the first and third leading causes of death in California.

Sincerely,

Mark B Horton, MD, MSPH, Director
California Department of Public Health

Introduction

The Burden of Heart Disease and Stroke

Heart disease and stroke are the first and third leading causes of death in California and a major cause of disability. In 2004, over 73,000 Californians died from heart disease and stroke, more than the total number of deaths in that year from cancer, diabetes, chronic liver disease/cirrhosis, suicide, homicide, and human immunodeficiency virus (HIV) combined. Additionally, heart disease and stroke impose an enormous economic burden on our State. The annual cost to California for heart disease and stroke will exceed \$48 billion in 2006.

The number of deaths from heart disease and stroke will undoubtedly increase in the future, as the State's population ages. This will further strain California's health care system and its economy, as well as the emotional and financial resources of families. It is clear that effective action is needed now to halt the devastating consequences of heart disease and stroke.

The Need for a Master Plan

Many groups in both the private and public sectors are invested in the fight against heart disease and stroke. Some of these groups address heart disease and stroke risk factors, such as tobacco use, physical inactivity, obesity/overweight, high blood pressure, and high cholesterol. Others advocate for segments of the population who are at highest risk for heart disease and stroke, such as African Americans and Latinos, or for women, who are often unaware of their risk. Some organizations work to improve health care for heart disease and stroke patients, while others propose policy changes that will benefit the prevention and treatment of heart disease and stroke. All of these groups are making earnest progress, but all too often in separate silos. The unfortunate result is an unintentional but inefficient overlap of effort and lost synergies.

In 2003, the State of California recognized the need to take the lead in coordinating and focusing the statewide assault on heart disease and stroke. The California Legislature passed Assembly Bill 1220 (Chapter 395, Berg, Statutes of 2003), which established a 12-member Heart Disease and Stroke Prevention and Treatment Task Force (Task Force) to write *California's Master Plan for Heart Disease and Stroke Prevention and Treatment* (Master Plan), which follows.

The Task Force also created a Strategic Document as a companion to the Master Plan. The Strategic document details action steps needed to implement the Master Plan's recommendations and identifies potential partners.

Master Plan

Master Plan

The Master Plan was written to guide and coordinate the efforts of the many organizations, agencies, and individuals who are stakeholders in reducing death and disability from heart disease and stroke. The Master Plan establishes the following nine goals for these partners to achieve:

1. Improve prevention, early detection, treatment, and management of risk factors for heart disease and stroke.
2. Decrease death and disability from heart disease and stroke through early detection, treatment, and management of acute events.
3. Improve chronic disease management of heart disease and stroke.
4. Decrease death and disability from heart disease and stroke through public education.
5. Decrease death and disability from heart disease and stroke through the education of health care professionals.
6. Improve cardiovascular health and quality of life through legislation and policy development.
7. Eliminate cardiovascular health disparities.
8. Improve quantity and quality of research on heart disease, stroke, and related risk factors.
9. Expand data acquisition and surveillance of cardiovascular disease, including the evaluation of programs targeting heart disease, stroke, and related risk factors.

To facilitate the work of partners, and to assure the comprehensiveness of the plan, the companion Strategic Document sets forth action steps for application in four settings: (1) communities; (2) schools; (3) workplaces; and (4) health care systems. Stakeholders who function in these various settings will be convened to address their respective action agendas. Their work will be guided by three advisory committees: the Heart Attack System Work Group, the Stroke System Work Group, and the Research Oversight Committee.

A commitment to quality, as well as equality, guided the decisions of the Task Force. The ultimate goal of the Master Plan is to raise the quality of heart disease and stroke prevention and treatment for all populations in California, regardless of race/ethnicity, age, gender, socioeconomic status, or geographical location.

Goal #1

Improve prevention, early detection, treatment, and management of risk factors for heart disease and stroke.

The established risk factors for heart disease and stroke include high cholesterol (i.e., high total cholesterol, high low-density lipoprotein (LDL), low high-density lipoprotein (HDL), and high triglycerides), high blood pressure, diabetes, tobacco use, overweight/obesity, and physical inactivity. In its consideration of these risk factors, the Task Force elected to focus on high blood pressure and high cholesterol. It reasoned that other programs in the California Department of Public Health (CDPH) are making excellent strides against tobacco use, poor nutrition, physical inactivity, diabetes, and overweight/obesity, and that it would be duplicative to address those risk factors in the Master Plan. Rather, the Task Force encourages collaboration with these programs and implementation of the recommendations in their strategic plans.

Recommendations:

- Increase the number of Californians who undergo regular screening and follow-up for high blood pressure and high cholesterol.
- Increase the number of Californians who know their blood pressure and cholesterol numbers.
- Increase the number of Californians who achieve and maintain recommended levels for blood pressure and cholesterol.

Goal #2

Decrease death and disability from heart disease and stroke through early detection, treatment, and management of acute events.

Recent improvements in the treatment of heart attack and stroke offer new hope to patients. However, to be effective, these new therapies need to be delivered within a narrow window of time (90 minutes for heart attack and 180 minutes for stroke) after symptoms begin. Both the health care system and the public need to make changes to maximize new therapies.

Recommendations:

- Educate the public to recognize the signs and symptoms of heart attack and stroke, and call 911 immediately when symptoms occur.
- Continue development of specialty centers for heart attack and stroke, certified by the State or another designated body.
- Under policies established by the Local Emergency Medical Services Agencies, transport heart attack and stroke patients preferentially to certified centers.
- Promote the use of telemedicine to assure that all hospitals have access to neurological expertise so they can provide optimal care to stroke patients.
- Improve the public's ability to respond to sudden cardiac arrest by promoting cardiopulmonary resuscitation training, as well as placement of automated external defibrillators in public places.

Goal #3

Improve chronic disease management of heart disease and stroke.

After a heart attack or stroke, the risk of disability and recurrent events must be mitigated to improve quality of life for patients and lower costs for society.

Recommendations:

- To reduce disability, increase availability of in-hospital rehabilitative care units, as well as long-term community rehabilitation for heart attack and stroke survivors.
- To reduce the risk of a recurrent heart attack or stroke, systematize the application of proven therapies (e.g., use of medications and lifestyle changes), beginning in the hospital setting.
- For ongoing care of heart disease and stroke patients, apply best practice disease-management models, including multidisciplinary teams, case managers, information technology that supports patient monitoring and follow-up, standing treatment orders, and patient self management.

Goal #4

Decrease death and disability from heart disease and stroke through public education.

There is a role for public education in every aspect of the prevention and treatment of heart disease and stroke, particularly in raising the awareness of signs and symptoms, and the need to call 911 immediately when signs and symptoms occur.

Recommendations:

- Use only educational materials that are culturally sensitive, language-appropriate, and presented at the literacy level of the intended audience.
- Target educational efforts for high-risk groups (e.g., certain racial/ethnic groups and women).
- Present education in a variety of venues throughout the community and use multiple communication channels (e.g., mass media, peer-to-peer education, provider/patient education).

Goal #5

Decrease death and disability from heart disease and stroke through the education of health care professionals.

In conjunction with public education, education of health care professionals is critical in the prevention and treatment of heart disease and stroke.

Recommendations:

- Increase awareness of and adherence to evidence-based guidelines and established protocols for prevention and management of heart disease and stroke.
- Provide continuing education to inform practicing health care professionals of updates to evidence-based guidelines for heart disease and stroke prevention and treatment.
- Develop and disseminate health education resources on heart disease and stroke to health care professionals, including emergency medical services providers.

Goal #6

Improve cardiovascular health and quality of life through legislation and policy development.

Legislation and policies drive changes in the social and economic environment that, in turn, change health behavior at the population level. In developing recommendations for legislation and policy, the Task Force emphasized (1) the education of legislators and other policy makers about heart disease and stroke, and (2) the cultivation of advocates for cardiovascular health.

Recommendations:

- Educate policymakers and public officials about the societal toll of heart disease and stroke.
- Develop and maintain an inventory of public and private policies that promote cardiovascular health; disseminate exemplary policies; identify policy gaps and suggest remedies.
- Use recognition and other incentives to encourage public and private policies that promote cardiovascular health, such as recognition awards for cities, counties, and workplaces with exemplary heart health policies.
- Support policies that promote statewide systems of care for heart attack and stroke.

Goal #7

Eliminate cardiovascular health disparities.

Surveillance data show that the burden of heart disease and stroke falls disproportionately on particular segments of the population. Certain racial/ethnic groups, including African Americans and Hispanics, have a high prevalence of risk factors, and African Americans have a higher than average mortality rate from heart disease and stroke. People residing in rural areas often have more difficulty accessing medical services. Women suffer from the misconception that heart disease is a man's disease, and their heart attacks are often misdiagnosed because they frequently present with different symptoms than men. The Master Plan recognizes these and other disparities and strives to bring all populations to a uniformly low burden of heart disease and stroke.

Recommendations:

- Target public education for high-risk groups, using language-appropriate and culturally sensitive educational materials.
- Within communities, assure accessible screening and follow-up for high blood pressure and cholesterol.
- Promote quality improvements in health care for all patients by recommending changes at the systems level (e.g., preprinted treatment orders, standard protocols).
- Improve cultural competency among health care professionals, so they may more effectively communicate with diverse populations.

Goal #8

Improve quantity and quality of research on heart disease, stroke, and related risk factors.

Future research funds should be used to promote clinical, translational (i.e., basic science to clinical trial and clinical trial to practice), and community-based research on the prevention, diagnosis, and treatment of heart disease, stroke, and related risk factors. Research should complement, not duplicate, efforts by the Federal Government (e.g., the National Heart, Lung, and Blood Institute) and the private sector (e.g., the American Heart Association).

Recommendations:

- Identify effective strategies for reducing disparities among specific high-risk racial/ethnic and gender groups.
- Measure the cost of heart disease and stroke in California.
- Examine the correlation between psychosocial conditions and behaviors and the risk of heart disease and stroke.
- Increase awareness of the need for including priority populations in research.
- Encourage participation by women and people from varied racial/ethnic groups in clinical studies.
- Encourage reporting of all study results in a population-specific and gender-specific manner.

Goal #9

Expand data acquisition and surveillance of cardiovascular disease, including the evaluation of programs targeting heart disease, stroke, and related risk factors.

Enhancing scientific capacity to define the burden of heart disease, stroke, and related risk factors is a priority for California. Surveillance and monitoring serve as a guide when creating public health programs and provide direction when allocating limited program funds. Accurate and timely data are vital in the assessment of the disease burden, as well as in the evaluation of programs and policies.

Recommendations:

- Maximize the use of existing data sources, including the Behavioral Risk Factor Survey (BRFS), the California Health Interview Survey (CHIS), the Death Statistical Master File, the Patient Discharge Data File, the California Women's Health Survey, and pre-hospital databases.
- Support the addition of modules to the annual California BRFS, including signs and symptoms of heart disease and stroke, cholesterol and blood pressure, and heart failure.
- Evaluate the feasibility of an outpatient reporting system for heart attack and stroke care, including rehabilitation.
- Evaluate the feasibility of statewide registries for acute coronary syndrome and stroke.
- Outreach to academic institutions throughout California to identify and collaborate with researchers who have experience in evaluating programs that address heart disease, stroke, and related risk factor prevention and treatment.

Strategic Document

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Background

California's Heart Disease and Stroke Prevention and Treatment Master Plan (Master Plan) responds to an urgent need that was acknowledged by the State Legislature and the Governor in 2003 with the passage of Assembly Bill (AB) 1220 (Berg). This legislation established the California Heart Disease and Stroke Prevention and Treatment Task Force (Task Force) for the purpose of writing a plan to reduce the morbidity, mortality, and economic burden of heart disease and stroke, the first and third leading causes of death in California. AB 1220 added Section 104141 to the Health and Safety Code (Appendix A) and directed the Speaker of the Assembly, the Senate Committee on Rules, and the Governor to appoint to the Task Force individuals with a demonstrated interest and expertise in heart disease or stroke.

The Task Force has four duties: (1) creating a comprehensive Master Plan with recommendations to the State Legislature, the Governor, and the California Department of Public Health (CDPH), including changes to existing law, regulations, programs, services, and policies; (2) publicizing the statewide profile of heart disease, stroke, and related risk factors, including morbidity and mortality; (3) identifying priority strategies for the prevention, treatment, and control of heart disease and stroke; and (4) assessing opportunities for collaborations with local health departments, community-based organizations, voluntary health organizations, and other public and private organizations statewide. The resulting Master Plan is not just a road map for CDPH; it is, instead, *California's* plan -- a statewide collaborative effort to defeat heart disease and stroke, involving both the public and private sectors.

In preparation for the writing of the Master Plan, the California Heart Disease and Stroke Prevention (CHDSP) Program, a unit of CDPH, hosted public forums in six regions across the State to gather input from organizations, programs, and individuals who have a stake in fighting heart disease and stroke. These forums yielded recommendations (Appendix B) that were brought before the Task Force before their first meeting. The Task Force has incorporated into the Master Plan recommendations from the *Public Forum Report* that are applicable to this State plan and acknowledges those recommendations that are being addressed by other CDPH plans.

The Task Force established three subcommittees: (1) Heart Disease Subcommittee; (2) Stroke Subcommittee; and (3) Risk Factors Subcommittee. Each subcommittee developed objectives and strategies for the following four settings: (1) communities; (2) schools; (3) workplaces; and (4) healthcare systems.

The objectives and related strategies addressed the following nine areas: (1) risk factor prevention and management; (2) acute heart

disease and stroke management; (3) chronic disease management of heart disease and stroke; (4) public education; (5) education of healthcare professionals; (6) legislation and policy development; (7) priority populations; (8) research; and (9) surveillance, monitoring, and evaluation. The subcommittees reported their recommendations to the full Task Force for discussion, refinement, and consensus.

In writing the Master Plan, the Task Force was mindful of the overarching principles set forth in the first meeting. These principles sort into the following three categories: (1) the public's right to timely access to high-quality, affordable care; (2) the critical role of education in empowering patients to prevent disease and to participate as full partners with healthcare providers in the treatment of disease; and (3) the need to increase the stature of prevention so that it is reimbursed as well, and valued as much, as treatment of clinical disease.

In its consideration of the risk factors for heart disease and stroke, the Task Force elected to focus on high blood pressure and high cholesterol. It reasoned that other programs in CDPH are making excellent strides against tobacco use, poor nutrition, physical inactivity, diabetes, and overweight/obesity, and that it would be duplicative to address those risk factors in the Master Plan. Rather, the Task Force encourages collaboration with these programs and implementation of the recommendations in their strategic plans.

Implementation of the Master Plan will be up to the many organizations and programs that have a stake in the reduction of heart disease and stroke. These stakeholders include those aiming to reduce risk factors; those trying to reduce the risk of heart disease and stroke among populations that are disparately affected by these conditions; and those in the healthcare industry treating heart disease and stroke and preventing disease recurrence. The recommendations in the Master Plan have been widely reviewed, and public input has been incorporated.

Evaluation will be ongoing throughout the period covered by the Master Plan. At midterm, progress will be comprehensively assessed, and adjustments will be made, as necessary, to meet the federal Healthy People 2020 Goals. Progress will be measured against baseline data that accompany each objective.

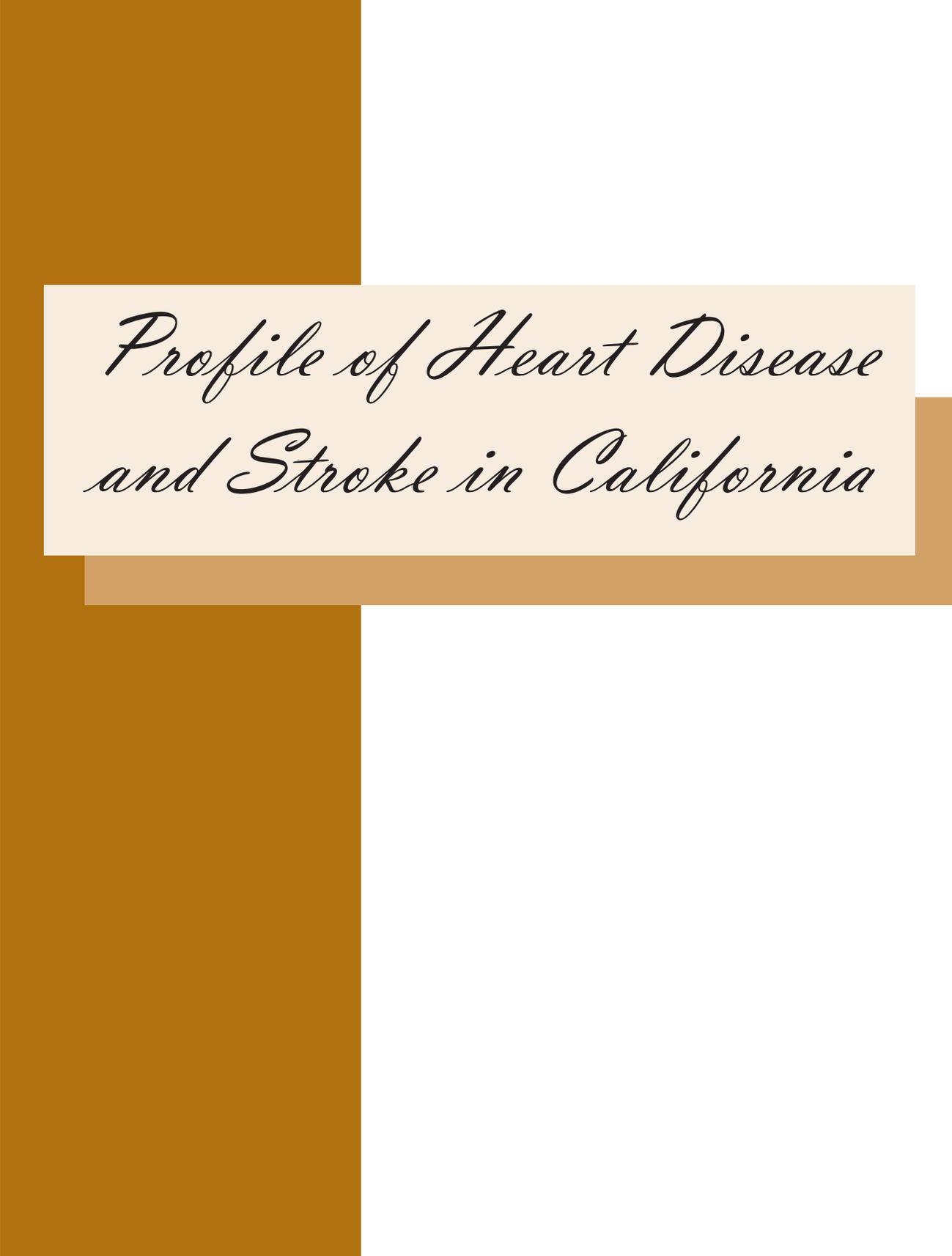
The Master Plan focuses on diseases of the heart and blood vessels (cardiovascular disease), with an emphasis on coronary heart disease, heart failure, and stroke. Other important cardiovascular diseases that will be affected by the recommendations in this Master Plan include: valvular heart disease, congenital heart disease, cardiac arrhythmias (including atrial fibrillation), cardiomyopathies, pulmonary hypertension, and peripheral vascular disease. Strategies that are known to prevent and treat coronary heart disease and stroke are likely to have a major impact on these other conditions and thereby contribute to a reduction in the State's morbidity and mortality from all cardiovascular disease.

Guide to this Document

This *Strategic Document* (Document) complements *California's Master Plan for Heart Disease and Stroke Prevention and Treatment* by presenting a detailed implementation strategy. It contains three main sections. The first, *Profile of Heart Disease and Stroke in California*, provides a statistical snapshot of mortality and morbidity attributable to these diseases, as well as a report on the prevalence of risk factors. This section establishes the baseline against which progress will be measured over the term of the Master Plan.

The second section is *Strategies for Improving Cardiovascular Health in California* (Action Plan). This Action Plan sets forth nine goals, as well as time-bound objectives and action steps designed to accomplish the goals. Where applicable, model programs are described as examples others may adopt or adapt. In addition, for each goal it lists potential partners whose involvement will be critical during the implementation of the Master Plan. The Task Force has invited these potential partners to take ownership of the portions of the Master Plan that are consistent with their missions. They are being asked to sign memoranda of understanding (MOUs) which reflect their formal commitment to accomplish their chosen action steps. Signed MOUs will be posted on the CHDSP Program web site at <http://www.dhs.ca.gov/cvd>.

The *Appendices*, the third section of this Document, contain supplementary information, including an executive summary of the public forum report that was provided to the Task Force, county-level data, an explanation of the methodologies used in the profile section, an overview of CDPH programs that address risk factors for heart disease and stroke, clinical guidelines for high blood pressure and high cholesterol control, resources, and Healthy People (HP) 2010 benchmarks for cardiovascular health.



*Profile of Heart Disease
and Stroke in California*

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Foreword

The total number of Californians who die each year from heart disease, stroke, and heart failure is staggering. In 2004, the number of deaths from heart disease and stroke in California (73,099) exceeded the total number of deaths from cancer, diabetes, chronic liver disease/cirrhosis, suicide, homicide, and HIV, combined. Of further concern is the impact of age on the risk of death from heart disease and stroke (Tables 1-3). As the average length of life extends, the number of deaths from heart disease, stroke, and heart failure will grow. With an ever-increasing number of heart disease and stroke events, amidst a healthcare system that is struggling against shrinking resources, new strategies to reduce the burden of disease are needed.

Selected data on heart disease, stroke, and related risk factors are presented in this section. Priority populations, including racial/ethnic groups, age, and gender, have been described. County-level data are presented in Appendix C.

This section provides the baseline information from which the impact of the Master Plan on heart disease and stroke mortality and morbidity will be measured. Progress will be assessed and evaluated in future data analyses. It is important to note that this is a partial picture of the burden of heart disease and stroke in California, since disability, costs of chronic care, and years of productive life lost are not included in this profile.

A description of the methods used to assess the data, as well as disease definitions (ICD-9 and ICD-10 codes), are included in Appendix D. A comprehensive report on the burden of heart disease, stroke, and related risk factors in California is available through the CHDSP Program.

Table 1: Number of Heart Disease Deaths in California, by Age and Gender (2004)

	Male	Female	Total
Under age 45	650	234	884
45-54	2,039	666	2,705
55-64	3,592	1,429	5,021
65-74	4,982	2,998	7,980
75-84	8,259	7,662	15,921
85 plus	7,103	12,563	19,666
Total	26,625	25,552	52,177

Table 2: Number of Stroke Deaths in California, by Age and Gender (2004)

	Male	Female	Total
Under age 45	227	146	373
45-54	419	306	726
55-64	594	487	1,081
65-74	1,102	1,054	2,156
75-84	2,380	3,258	5,638
85 plus	2,112	4,798	6,910
Total	6,834	10,049	16,883

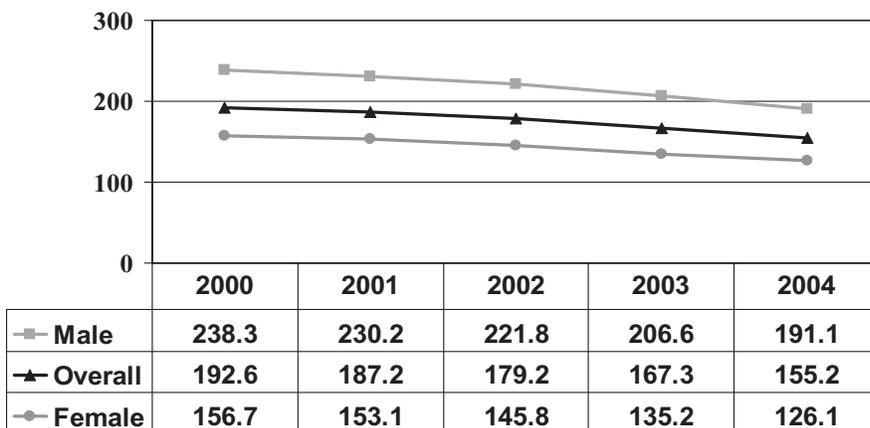
Table 3: Number of Heart Failure Deaths

	Male	Female	Total
Under age 45	30	12	42
45-54	46	31	77
55-64	98	70	168
65-74	195	187	382
75-84	537	639	1,176
85 plus	754	1,440	2,194
Total	1,660	2,379	4,039

Cardiovascular Mortality and Morbidity Rates

Heart Disease Mortality

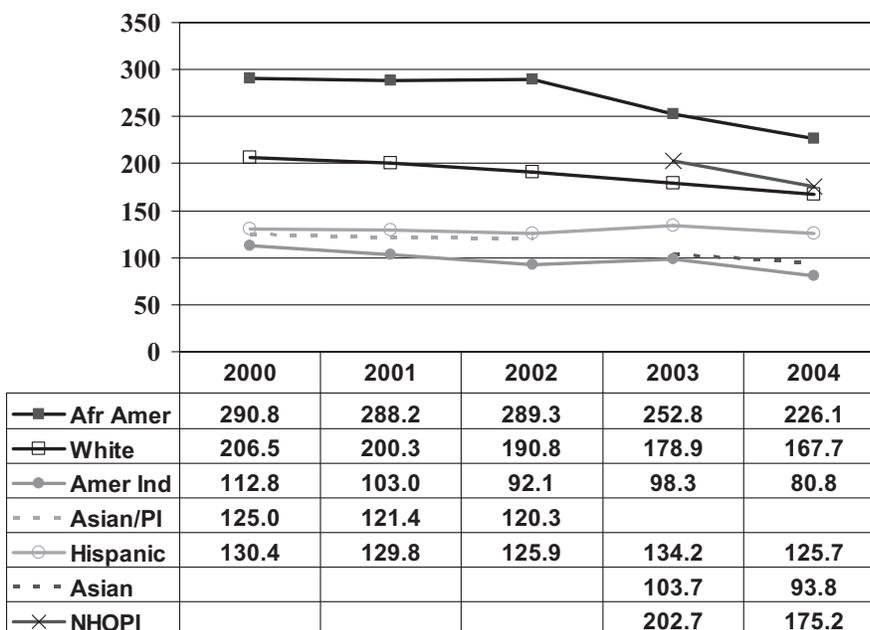
Figure 1: Heart Disease Mortality Rates in California, Overall and by Gender (2000-2004)
[Age-Adjusted Deaths per 100,000 Population]



For Diseases of the Heart (hypertensive heart disease and ischemic heart disease), the overall age-adjusted mortality rate has declined 19.4 percent, from 192.6 deaths per 100,000 population in 2000 to 155.2 deaths per 100,000 population in 2004 (Figure 1).

Both genders have experienced declines in heart disease mortality. For men, whose rates are about fifty percent higher than those of women, the decline from 2000 through 2004 is 19.8 percent (from 238.3 per 100,000 to 191.1 per 100,000); for women, the decline is comparable: 19.5 percent (from 156.7 per 100,000 to 126.1 per 100,000).

Figure 2: Heart Disease Mortality Rates in California, by Race/Ethnicity (2000-2004)
[Age-Adjusted Deaths per 100,000 Population]



In 2003, Asians were separated from other Pacific Islanders (PI) and were subsequently grouped with native Hawaiians to form the “Native Hawaiian Other Pacific Islander” (NHOPI) race/ethnicity category.

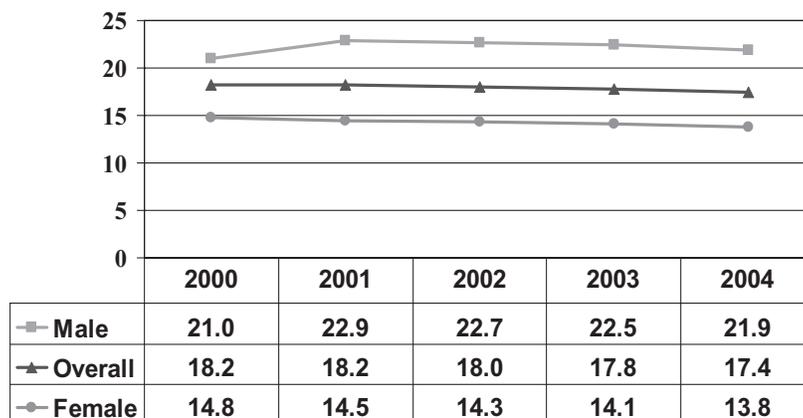
All racial/ethnic groups experienced declines in heart disease mortality between the years 2000 and 2004 (Figure 2). The declines for American Indians and African Americans were the greatest, at 28.4 percent and 22.2 percent, respectively. For Hispanics, the mortality rate stayed relatively stable, with just a 3.6 percent decline. Though the decline for African Americans was relatively great, this group, nonetheless, continues to have mortality rates that are considerably higher than those of the other racial/ethnic groups. In contrast, American Indians (see note in Appendix E regarding misclassification of American Indians) and Asian/Pacific Islanders (and Asians, starting in 2003) experienced relatively low burdens of heart disease mortality; in fact, across all years the rates for each of these two groups were less than half those of African Americans. While African Americans have the highest age-adjusted mortality rates, in terms of actual numbers of deaths, whites account for about three-fourths of all heart disease deaths (38,258 of 52,177 or 73.3 percent in 2004).

The mortality rates shown in Figures 1 and 2 represent more than 50,000 deaths per year (i.e., about one in five deaths).

Heart Disease Morbidity (Hospitalizations)

For Diseases of the Heart (hypertensive heart disease; ischemic heart disease; and cardiovascular disease, unspecified), the overall age-adjusted morbidity rate has declined 4.4 percent, from 18.2 hospital discharges per 1,000 population in 2000 to 17.4 hospital discharges per 1,000 population in 2004 (Figure 3).

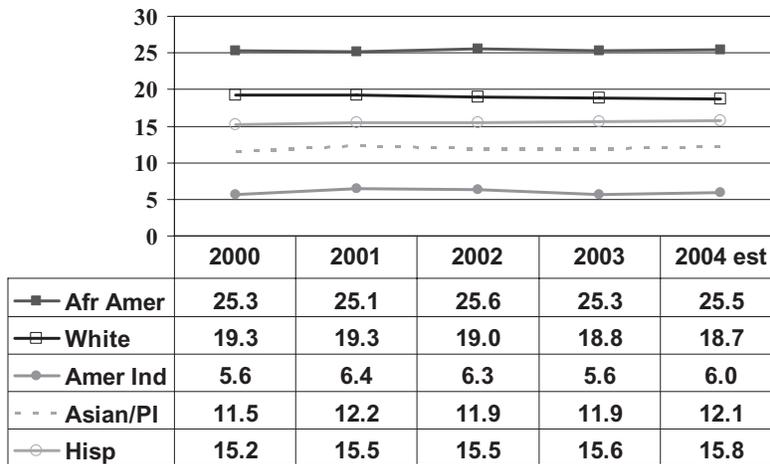
Figure 3: Heart Disease Morbidity Rates in California Overall and by Gender (2000-2004)
[Age-Adjusted Hospital Discharges per 1,000 Population]



Women have experienced a decline in heart disease morbidity (6.8 percent, from 14.8 per 1,000 to 13.8 per 1,000); however, for men, whose rates are about 40 to 50 percent higher than those of women, there is an increase in morbidity of 4.3 percent from 21.0 per 1,000 in 2000 to 21.9 per 1,000 in 2004.

The morbidity rates shown in Figures 3 and 4 represent about 575,000 hospital discharges per year (i.e., about one in seven hospital discharges).

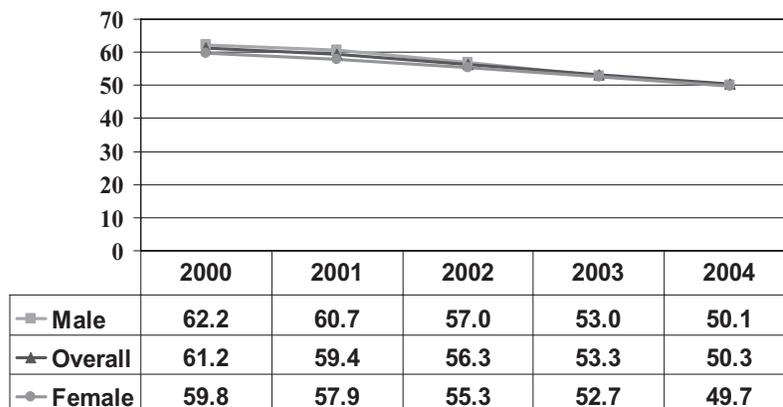
Figure 4: Heart Disease Morbidity Rates in California, by Race/Ethnicity (2000-2003 and estimates for 2004) [Age-Adjusted Hospital Discharges per 1,000 Population]



Heart disease morbidity has remained relatively stable across all racial/ethnic groups, with only slight year-to-year changes (Figure 4). Overall, only whites experienced a decline (3.1 percent), from 19.3 discharges per 1,000 population in 2000 to 18.7 discharges per 1,000 population in 2004. The increases for the other racial/ethnic groups are as follows: African Americans, 0.8 percent; American Indians, 7.1 percent; Asian/Pacific Islanders, 5.2 percent; and Hispanics, 3.9 percent. While the greatest increase was experienced by American Indians, this group reportedly has the lowest morbidity rates, less than one-fourth of those of African Americans, whose rates are the highest.

In terms of actual numbers of heart disease-related hospital discharges, whites account for about three-fourths of the total (408,205 of 577,553 or 70.7 percent in 2003).

Figure 5: Stroke Mortality Rates in California, Overall and by Gender (2000-2004) [Age-Adjusted Deaths per 100,000 Population]



Stroke Mortality

For Stroke (cerebrovascular diseases), the overall age-adjusted mortality rate has declined 17.8 percent,

from 61.2 deaths per 100,000 population in 2000 to 50.3 deaths per 100,000 population in 2004 (Figure 5).

Both genders have experienced declines in stroke mortality. For men, whose rates are only slightly higher than women, the decline from 2000 through 2004 is 19.5 percent (from 62.2 per 100,000 to 50.1 per 100,000); for women, the decline is 16.9 percent (from 59.8 per 100,000 to 49.7 per 100,000).

All racial/ethnic groups experienced declines in stroke mortality from the year 2000 through the year 2004 (Figure 6). The declines for American Indians and whites were the greatest,

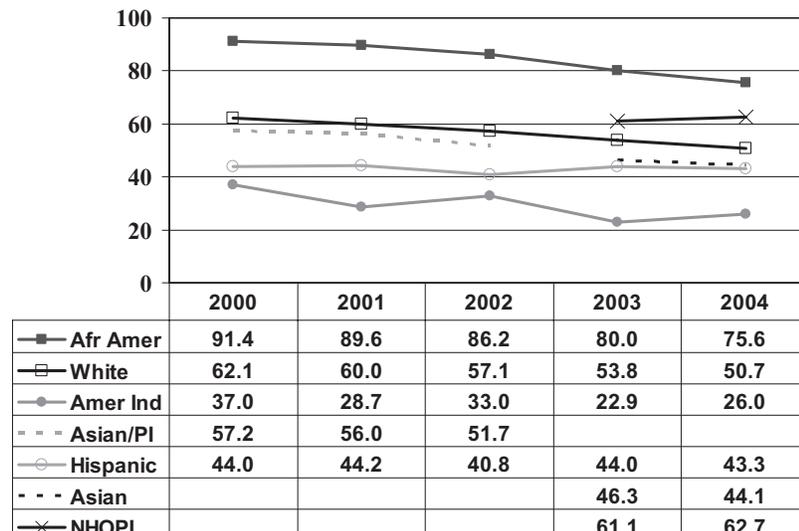
at 29.7 percent and 18.4 percent, respectively. For Hispanics, the stroke mortality rate remained relatively stable, with just a 1.6 percent decline. While the decline for African Americans was close to that of whites, at 17.3 percent, this group experiences mortality rates that are considerably higher than those of the other racial/ethnic groups, though the disparities appear to be narrowing. American Indians and Hispanics experienced relatively low burdens of stroke mortality; across all years the rates for each of these two groups were less than half those of African Americans. While African Americans have the highest age-adjusted mortality rates (Figure 6) in terms of actual numbers of stroke deaths, about seven of ten decedents (11,722 of 16,883 or 69.4 percent in 2004) are white.

The mortality rates shown in Figures 5 and 6 represent about 17,000 deaths per year (i.e., about one in fourteen deaths).

Stroke Morbidity (Hospitalizations)

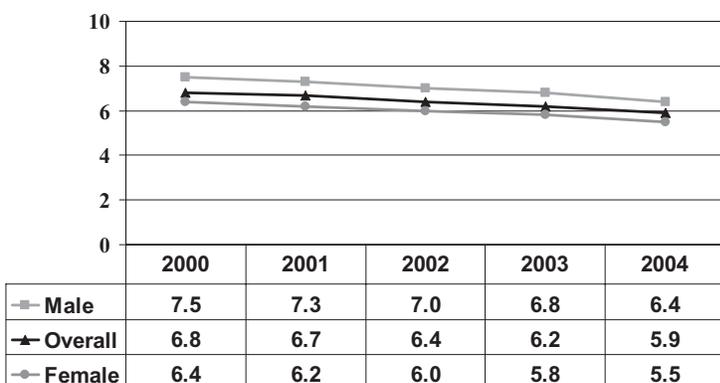
For Stroke (cerebrovascular disease), the overall age-adjusted morbidity rate has declined 13.2 percent, from 6.8 hospital discharges per 1,000 population in 2000 to 5.9 hospital discharges per 1,000 population in 2004 (Figure 7).

Figure 6: Stroke Mortality Rates in California, by Race/Ethnicity (2000-2004)
[Age-Adjusted Deaths per 100,000 Population]



Both men and women have experienced declines in stroke morbidity. For women, this decline is 14.1 percent, from 6.4 discharges per 1,000 in 2000 to 5.5 discharges per 1,000 in 2004. For men, whose rates are slightly higher than women, there was a decrease in morbidity of 14.7 percent from 7.5 discharges per 1,000 in 2000 to 6.4 discharges per 1,000 in 2004. The morbidity rates shown in Figures 7 and 8 represent about 197,000 hospital discharges per year (i.e., about one in twenty hospital discharges).

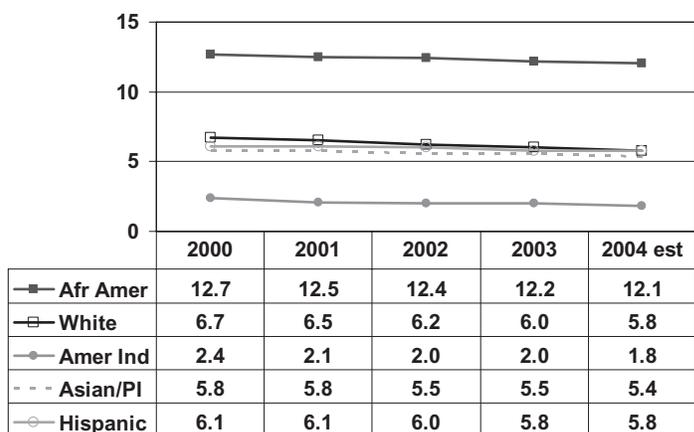
Figure 7: Stroke Morbidity Rates in California, Overall and by Gender (2000-2004)
[Age-Adjusted Hospital Discharges per 1,000 Population]



Stroke morbidity has been on a slight decline across all racial/ethnic groups, with only American Indians and whites experiencing large relative declines between the years 2000 and 2004 (Figure 8). The declines for American Indians and whites are as follows: 25.0 percent, from 2.4 discharges per 1,000 population to 1.8 discharges per 1,000 population and 13.4 percent, from 6.7 discharges per 1,000 population to 5.8 discharges per 1,000 population.

The modest declines for the other racial/ethnic groups are as follows: African Americans, 4.7 percent; Asian/Pacific Islanders, 6.9 percent; and Hispanics, 4.9 percent. While the greatest decline in stroke-related morbidity was seen in American Indians, this group reportedly has the lowest morbidity rates in 2000-2004, less than one-fifth of those of African Americans, whose rates are the highest.

Figure 8: Stroke Morbidity Rates in California, by Race/Ethnicity (2000-2003 and estimates for 2004)
[Age-Adjusted Hospital Discharges per 1,000 Population]



In terms of actual numbers of stroke-related hospital discharges in California, whites account for about two-thirds of the total (129,911 of 201,328 or 64.5 percent in 2003).

Heart Failure Mortality

For Heart Failure, the overall age-adjusted mortality rate has increased 11.1 percent, from 10.8 deaths per 100,000 population in 2000 to 12.0 deaths per 100,000 population in 2004 (Figure 9).

Both genders have experienced increases in heart failure mortality.

For men, whose rates are slightly higher than those of women, the increase from 2000 through 2004 is 8.6 percent (from 11.6 per 100,000 to 12.6 per 100,000); for women, the increase is fifty percent higher: 12.9 percent (from 10.1 per 100,000 to 11.4 per 100,000).

All racial/ethnic groups experienced increases in heart failure mortality between the years 2000 and 2004 (Figure 10). The increases for Hispanics and whites were the greatest, at 27.1 percent and 14.4 percent, respectively. For African Americans, the increase was modest (7.1 percent), and for American Indians, the mortality rate stayed fairly stable, with just a 1.7 percent increase. While most of the population groups experienced increases in heart failure mortality, for African Americans and whites, the mortality rates are consistently higher than those of the other racial/ethnic groups. In contrast, American Indians and Asian/Pacific Islanders (and Asians, starting in 2003) experienced relatively low burdens of heart failure mortality; across all years, the rates for these two groups were about half those of African Americans. While African Americans have experienced the highest age-adjusted mortality rates (Figure 10) in terms of actual numbers of heart failure deaths, about four of five decedents (3,198 of 4,039 or 79.2 percent in 2004) are white.

Figure 9: Heart Failure Mortality Rates in California, Overall and by Gender (2000-2004)
[Age-Adjusted Deaths per 100,000 Population]

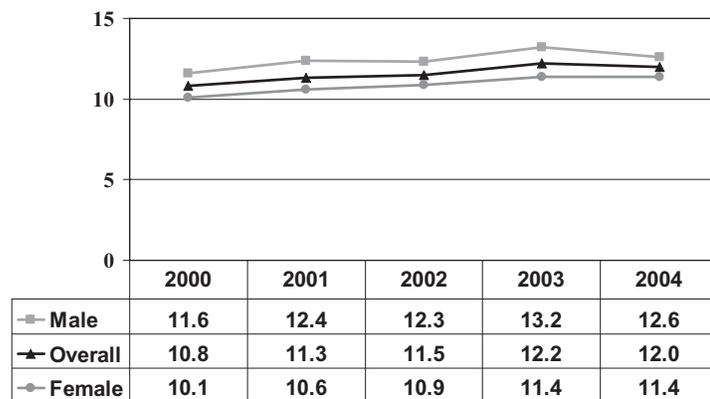
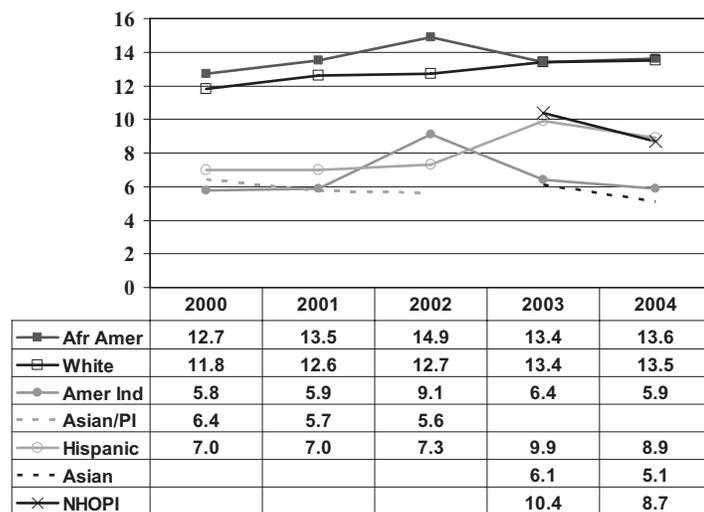


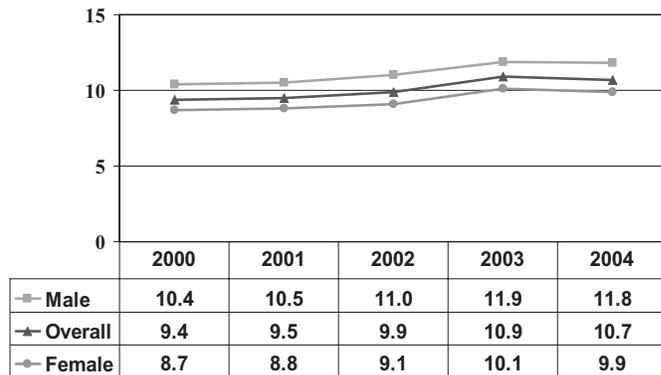
Figure 10: Heart Failure Mortality Rates in California, by Race/Ethnicity (2000-2004)
[Age-Adjusted Deaths per 100,000 Population]



The mortality rates shown in Figures 9 and 10 represent more than 4,000 deaths per year.

Heart Failure Morbidity (Hospitalizations)

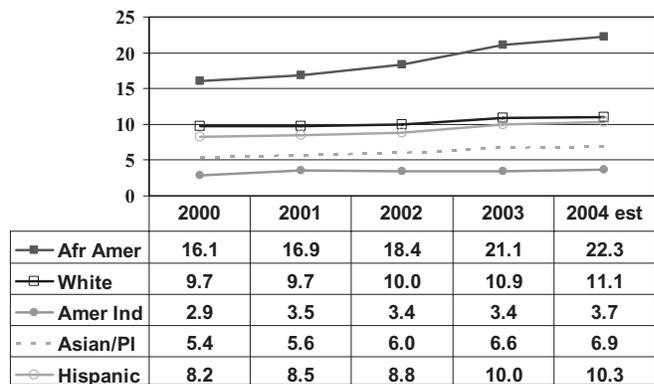
Figure 11: Heart Failure Morbidity Rates in California, Overall and by Gender (2000-2004)
[Age-Adjusted Hospital Discharges per 1,000] Population]



For Heart Failure, the overall age-adjusted morbidity rate has increased 13.8 percent, from 9.4 hospital discharges per 1,000 population in 2000 to 10.7 hospital discharges per 1,000 population in 2004 (Figure 11).

Both men and women have experienced increases in heart failure morbidity. For women, this increase is 13.8 percent, from 8.7 discharges per 1,000 in 2000 to 9.9 discharges per 1,000 in 2004. For men, whose rates are slightly higher than those of women, there is an increase in morbidity of 13.5 percent from 10.4 discharges per 1,000 in 2000 to 11.8 discharges per 1,000 in 2004.

Figure 12: Age-Adjusted Heart Failure Morbidity Rates in California, by Race/Ethnicity (2000-2003 and estimates for 2004)
[Age-Adjusted Hospital Discharges per 1,000 Population]



The morbidity rates shown in Figures 11 and 12 represent 358,109 discharges per year (i.e., about one in 11 hospital discharges).

Heart failure morbidity has increased across all racial/ethnic groups between the years 2000 and 2004, with the largest increase among African Americans: 38.5 percent, from 16.1 discharges per 1,000 population to 22.3 discharges per 1,000 population (Figure 12). For African Americans, whose heart failure mortality rates have consistently been higher than those of the other racial/ethnic groups, this difference has led to an increasing disparity over time. The increases in heart failure morbidity for the other racial/ethnic groups are as follows:

Asian/Pacific Islanders, 27.8 percent; American Indians, 27.6 percent; Hispanics, 25.6 percent; and whites, 14.4 percent.

In terms of actual numbers of heart failure-related discharges, whites account for about two-thirds of the total (237,766 of 350,420 or 67.9 percent in 2003).

Cardiovascular Risk Factor Prevalences

The following data are self-reported and may underestimate actual prevalences.

High Cholesterol

Adult respondents to the 2001 California Health Interview Survey (CHIS) were asked the following questions about heart disease and cholesterol.

- ❖ “Has a doctor ever told you that you have any kind of heart disease?”

For those who answered in the affirmative to the above question:

- ❖ “About how long ago did you have your blood cholesterol checked?”

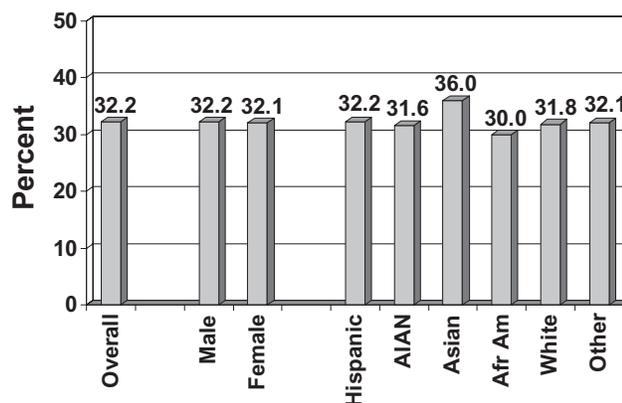
For those who provided an answer other than “never” to the above question:

- ❖ “The last time cholesterol was checked, did a doctor tell you your blood cholesterol was high?”

Seven percent (7.0 percent) of adults (7.3 percent of men and 6.7 percent of women) indicated that they had been given a heart disease diagnosis by a physician (data not shown). By race/ethnicity, the heart disease prevalence estimates varied: American Indian/Alaska Native (AIAN), 11.3 percent; white, 8.9 percent; African American, 8.6 percent; “Other” Single/Multiple Race, 5.3 percent; Asian, 5.1 percent; and Hispanics, 3.6 percent.

Of the 7.0 percent of adults with heart disease, nearly all of them (95.7 percent, data not shown) had had their cholesterol checked, and 32.2 percent of these respondents indicated that they had been told by a physician that their blood cholesterol was high (Figure 13). While there was no difference observed by gender, the racial/ethnic-specific prevalence estimates varied.

Figure 13: Prevalence of High Cholesterol in California Adults (2001)



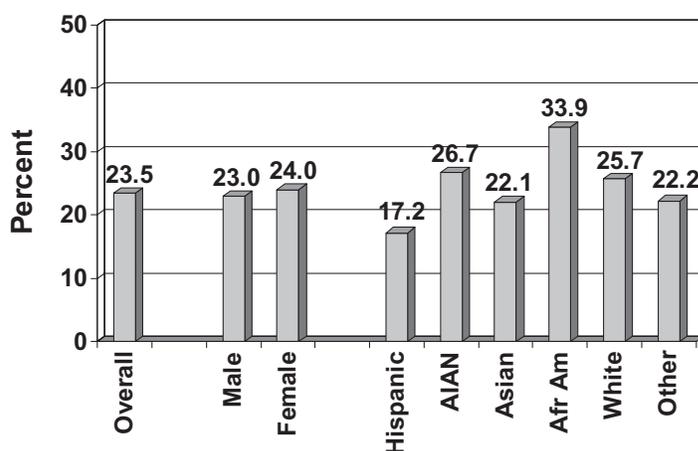
Prevalence estimates are for those who have been given a heart disease diagnosis.

High Blood Pressure

Adult respondents to the 2003 CHIS were asked the following two questions about high blood pressure:

- ❖ “Has a doctor ever told you that you have high blood pressure?”
- ❖ (for those who answered “yes” to the above question) “Are you now taking any medications to control your high blood pressure?”

Figure 14: *Prevalence of High Blood Pressure in California Adults (2003)*



Nearly one in four adults (23.5 percent) reported having been diagnosed with high blood pressure by a physician (Figure 14). The prevalence estimates for high blood pressure did not vary considerably by gender (23.0 percent for men and 24.0 percent for women), though there were some differences by race/ethnicity. African Americans have the highest prevalence of high blood pressure at 33.9 percent, AIAN, 26.7 percent; whites, 25.7 percent; those of “Other” Single/Multiple Race, 22.2 percent; Asians, 22.1 percent; and Hispanics, 17.2 percent.

Of the 23.5 percent of California adults reporting a high blood pressure diagnosis, 37.7 percent report taking medications to control their condition (data not shown). Of that group, a slightly higher proportion of women (69.9 percent) than men (65.3 percent) report taking medications, and differences in reporting were observed by race/ethnicity: African American (74.9 percent), Asian (73.1 percent), white (71.7 percent), AIAN (63.4 percent), “Other” Single/Multiple Race (60.5 percent), and Hispanic (50.8 percent).

Diabetes

Adult respondents to the 2003 CHIS were asked a series of questions about diabetes. The relevant questions are the following:

- ❖ “Has a doctor ever told you that you have diabetes or sugar diabetes?” (This does not include gestational diabetes.)

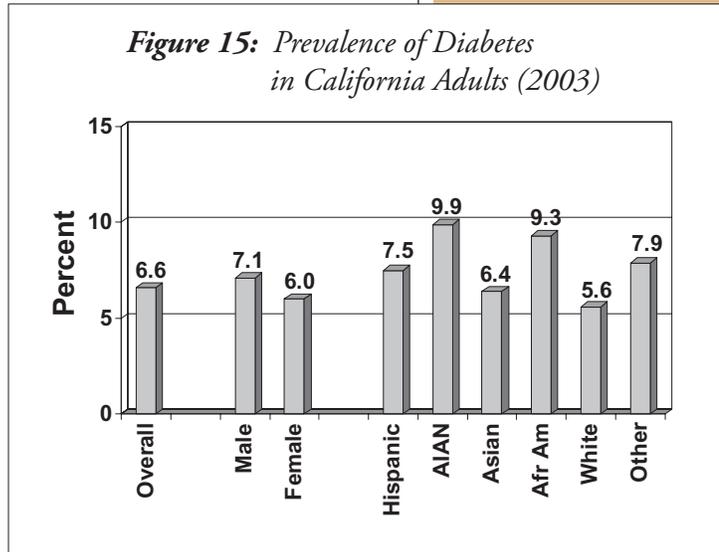
For those who answered “yes” to the above question:

- ❖ “Were you told that you have Type 1 or Type 2 diabetes?” (If needed, there is a prompt: “Type 1 diabetes results from the body’s failure to produce insulin and is usually diagnosed in children and young adults. Type 2 diabetes results from insulin resistance and is more common than Type 1.”)

Almost seven percent (6.6 percent) of adults (7.1 percent of men and 6.0

percent of women) reported that they had been diagnosed with diabetes by a physician (Figure 15). By race/ethnicity, the diabetes prevalence estimates varied: AIAN, 9.9 percent; African American, 9.3 percent; “Other” Single/Multiple Race, 7.9 percent; Hispanic, 7.5 percent; Asian, 6.4 percent; and white, 5.6 percent.

Of the 6.6 percent of California adults reporting a diabetes diagnosis, 84.3 percent indicated Type 2 diabetes (85.8 percent of men with diabetes and 82.6 percent of women with diabetes) (data not shown).



Cigarette Smoking

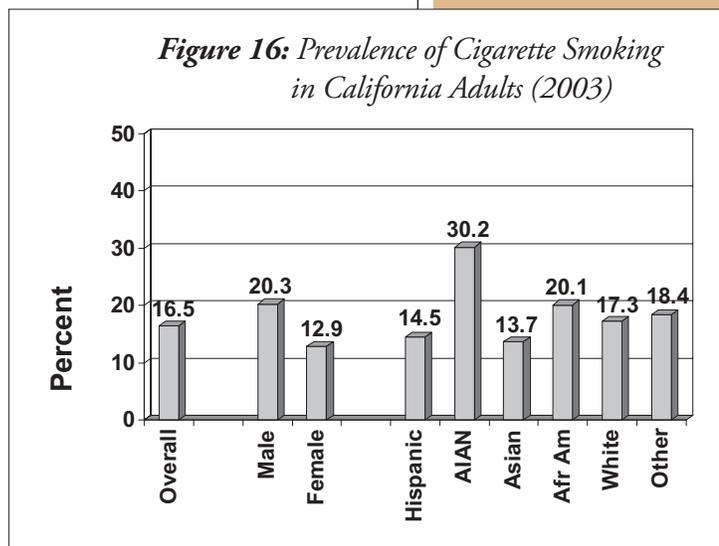
Adult respondents to the 2003 CHIS were asked a series of questions about smoking. The relevant questions are:

- ❖ “Altogether have you smoked at least 100 or more cigarettes in your entire lifetime?”

For those who answered “yes” to the above question:

- ❖ “Do you now smoke cigarettes every day, some days, or not at all?”

Taken together, these two questions are used to determine adult smoking prevalence. Respondents who answer the first question in the negative, together with those who are asked the second question and choose the “not at all” response, are considered nonsmokers. Those who are asked the second question and choose either the “every day” or “some days” response are considered smokers.



The cigarette smoking prevalence among California adults was determined to be 16.5 percent (Figure 16). The prevalence for men (20.3 percent) is more than fifty percent greater than it is for women (12.9 percent). By race/ethnicity, the smoking prevalence estimates varied: AIAN had the highest prevalence, 30.2 percent, followed by African Americans, 20.1 percent; those of “Other” Single/Multiple Race, 18.4 percent; whites, 17.3 percent; Hispanics, 14.5 percent; and Asians, 13.7 percent.

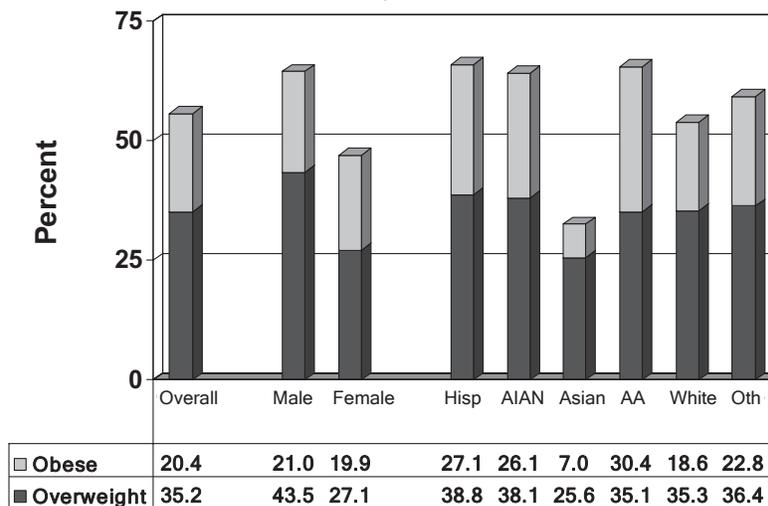
Overweight and Obese

Adult respondents to the 2003 CHIS were asked the following two questions from which Body Mass Index (BMI), used to determine if one is overweight or obese, is calculated:

- ❖ “How tall are you without shoes?”
- ❖ “How much do you weigh without shoes?” (This does not include gestational weight gain.)

Overall, 35.2 percent of adults were considered overweight (BMI 25 - 29) and 20.4 percent were obese (BMI 30 or more) (Figure 17). A greater proportion of men (versus women) were overweight or obese (43.5 percent and 21.0 percent for men, versus 27.1 percent and 19.9 percent for women). For all of the racial/ethnic groups except Asians, more than half were overweight or obese. For Asians, only 32.6 percent were overweight (25.6 percent) or obese (7.0 percent).

Figure 17: Prevalence of Overweight and Obesity in California Adults (2003)



Physical Inactivity

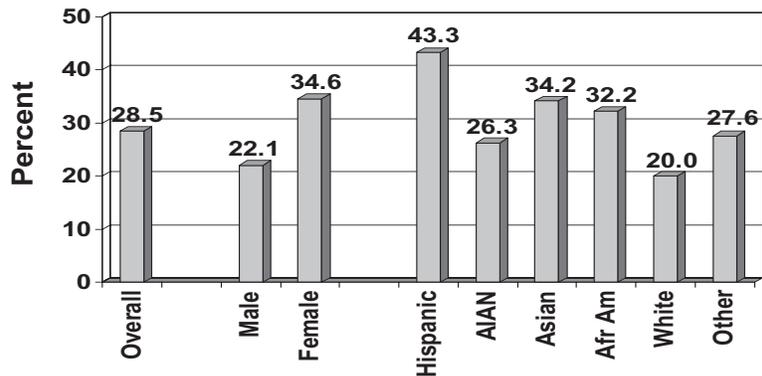
Adult respondents to the 2001 CHIS were asked a number of questions about physical activity. Based on their answers, respondents were considered either to have engaged in physical activities or to have been physically inactive. The kinds of activities about which respondents were asked include the following:

- ❖ Walking or bicycling to or from work, school, or to do errands;
- ❖ Sitting, standing, walking around;
- ❖ Lifting or carrying light loads, moderate loads, or heavy loads;
- ❖ Vigorous activities resulting in heavy sweating or large increases in breathing or heart rate;
- ❖ Moderate activities resulting in light sweating or moderate increases in breathing or heart rate; and
- ❖ Exercises to strengthen muscles, such as lifting weights.

Based on their answers, respondents were scored as either physically active or physically inactive. Nearly three in ten adults (28.5 percent) were considered physically inactive (Figure 18). The prevalence of inactivity was greater for females (34.6 percent) than for males (22.1 percent), and Hispanics had the highest prevalence (43.3 percent) of all of the racial/ethnic groups. The physical inactivity prevalence

estimates for others are: Asians, 34.2 percent; African Americans, 32.2 percent; those of "Other" Single/Multiple Race, 27.6 percent; AIAN, 26.3 percent; and whites, 20.0 percent.

Figure 18: Prevalence of Physical Inactivity in California Adults (2001)



*Strategies for Improving
Cardiovascular Health
in California*

List of Acronyms

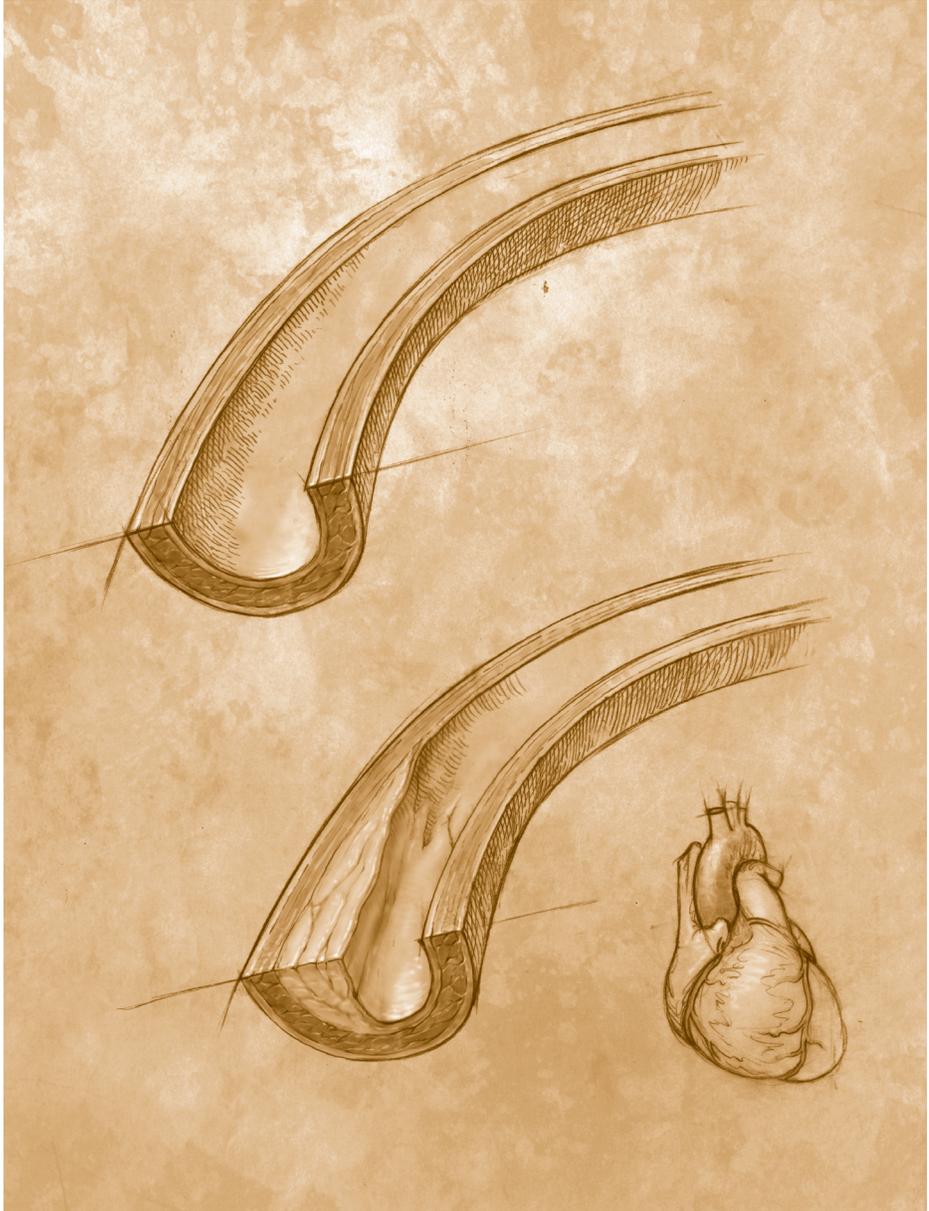
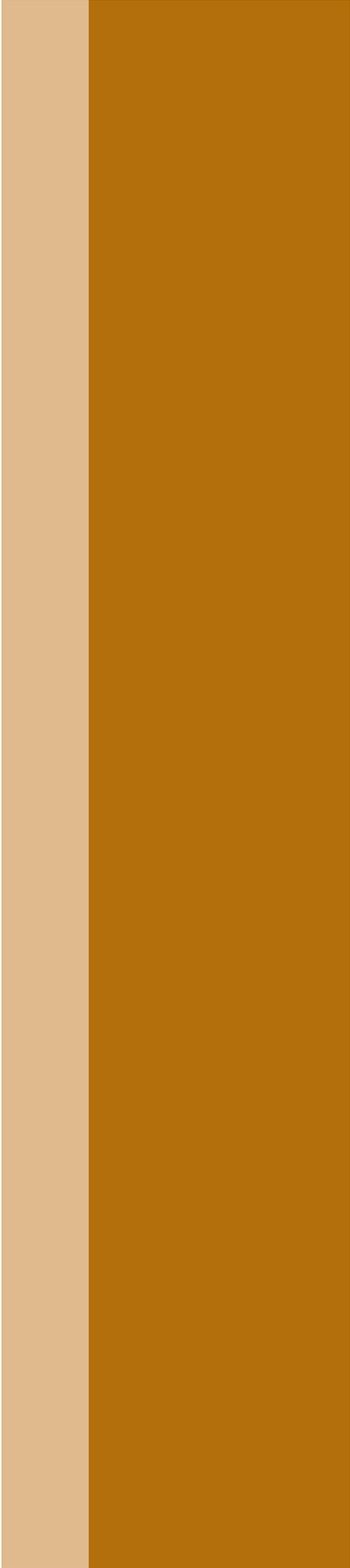
AAFP	American Academy of Family Physicians
AAN	American Academy of Neurology
AANN.....	American Association of Neuroscience Nurses
AAOHN.....	American Association of Occupational Health Nurses
AAP	American Academy of Pediatrics
AARP.....	American Association of Retired Persons
ABC	Association of Black Cardiologists
ACC	American College of Cardiology
ACCME.....	American Council on Continuing Medical Education
ACE	Angiotensin-converting enzyme
ACHD	Association of California Healthcare Districts
ACN	Association of California Neurologists
ACOG.....	American College of Obstetricians and Gynecologists
ACP	American College of Physicians
ADA	American Diabetes Association
AED	Automated external defibrillator
AHA	American Heart Association
AHRQ.....	Agency for Healthcare Research and Quality
AIAN	American Indians/Alaska Natives
AMA.....	American Medical Association
AMI	Acute myocardial infarction
ARB	Angiotensin II receptor blocker
ARC	American Red Cross
ASA	American Stroke Association
BMI	Body Mass Index
BOMA.....	Building Owners and Managers Association
BP.....	Blood pressure
BRFS.....	Behavioral Risk Factor Survey
CAA	California Ambulance Association
CABWHP.....	California Black Women's Health Project
Cal ACEP	California Chapter, American College of Emergency Physicians
Cal PERS	California Public Employees Retirement System
Cal SNA.....	California School Nutrition Association
CANP.....	California Association of Nurse Practitioners
CAPA.....	California Association of Physician Assistants
CAPG	California Association of Physician Groups
CBHN	California Black Health Network
CCLHO	California Conference of Local Health Officers
CDA	California Dietetic Association
CDC.....	Centers for Disease Control and Prevention
CDE	California Department of Education
CDPH	California Department of Public Health
CDMHC	California Department of Managed Health Care
CDMV	California Department of Motor Vehicles
CDPH	California Department of Public Health
CDPR	California Department of Parks and Recreation
CENA.....	California Emergency Nurses Association
CHA.....	California Hospital Association

List of Acronyms (Continued)

CHDSP.....	California Heart Disease and Stroke Prevention Program
CHIS.....	California Health Interview Survey
CMA.....	California Medical Association
CMAC.....	California Medical Assistance Commission
CMS.....	Centers for Medicare and Medicaid Services
CNA.....	California Nurses Association
COMH.....	California Office of Multicultural Health
COPE.....	California Osteoporosis Prevention and Education Program
COPI.....	California Obesity Prevention Initiative
COWH.....	California Office of Women's Health
CPA.....	California Pharmacists Association
CPCA.....	California Primary Care Association
CPR.....	Cardio-pulmonary resuscitation
CPTA.....	California Physical Therapy Association
CRHPC.....	California Rural Health Policy Council
CRIHB.....	California Rural Indian Health Board
CSRC.....	California Society for Cardiac Rehabilitation
CTA.....	California Teachers Association
CTEC.....	California Telemedicine and eHealth Center
DSMF.....	Death Statistical Master File
ED.....	Emergency Department
EKG.....	Electrocardiogram
EMD.....	Emergency medical dispatcher
EMDAC.....	Emergency Medical Directors Association of California
EMR.....	Electronic medical record
EMS.....	Emergency medical services
EMSA.....	Emergency Medical Services Authority
EMSAAC.....	Emergency Medical Services Administrators Association of California
EMT.....	Emergency medical technician
EPIC.....	Epidemiology and Prevention for Injury Control
HCUP.....	Healthcare Cost and Utilization Project
HDL.....	High-density lipoprotein
HEDIS.....	Health Plan Employer Data and Information Set
HFSA.....	Heart Failure Society of America
HIPAA.....	Health Insurance Portability and Accountability Act
HMO.....	Health maintenance organization
HP2010.....	Healthy People 2010
ICD.....	International Classification of Diseases
IHA.....	Integrated Healthcare Association
IHP.....	Indian Health Program
IHS.....	Indian Health Service
IOM.....	Institute of Medicine
ISBP.....	International Society of Black Physicians
ISHIB.....	International Society of Hypertension in Blacks
JCAHO.....	Joint Commission on the Accreditation of Healthcare Organizations

List of Acronyms (Continued)

JNC 7.....	The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure
KIDS	Kids Identifying and Defeating Stroke
LDL.....	Low-density lipoprotein
LEMSA	Local Emergency Medical Services Agency
MOU	Memorandum of understanding
NAHN	National Association of Hispanic Nurses
NBNA.....	National Black Nurses Association
NCQA	National Committee on Quality Assurance
NHLBI.....	National Heart, Lung, and Blood Institute
NHMA.....	National Hispanic Medical Association
NHOPI.....	Native Hawaiian Other Pacific Islander
NIH	National Institutes of Health
NRMI	National Registry of Myocardial Infarction
NSA	National Stroke Association
NSTEMI.....	Non-ST elevation myocardial infarction
OSHPD.....	Office of Statewide Health Planning and Development
OTAC.....	Occupational Therapy Association of California
PBGH	Pacific Business Group on Health
PCI.....	Percutaneous coronary intervention
PCNA.....	Preventive Cardiovascular Nurses Association
PDDF.....	Patient Discharge Data File
PHCA.....	Preventive Health Care for the Aging
PI	Pacific Islander
Project LEAN	Project Leaders Encouraging Activity and Nutrition
PSA	Peninsula Stroke Association
PTA.....	Parent Teacher Association
QIO	Quality Improvement Organization
REACH 2010.....	Racial and Ethnic Approaches to Community Health 2010
RWJF.....	Robert Wood Johnson Foundation
SAF.....	Stroke Awareness Foundation
SEIU	Service Employees International Union
SHC.....	School Health Connections
SHM.....	Society of Hospital Medicine
STEMI.....	ST elevation myocardial infarction
TIA.....	Transient ischemic attack
TLC.....	Therapeutic lifestyle changes
UC	University of California
WISEWOMAN	Well-Integrated Screening and Evaluation for Women Across the Nation
YMCA.....	Young Men's Christian Association



Goal #1

Recommendations for Prevention, Early Detection, and Treatment of Risk Factors

Risk factors for heart disease and stroke are conditions or behaviors that increase the likelihood of developing cardiovascular disease. Risk factors for heart disease and stroke that cannot be modified include: increasing age, gender, family history of cardiovascular disease, and race/ethnicity. There are other important risk factors for heart disease and stroke that can be modified, including: high cholesterol, high blood pressure, diabetes, tobacco use, overweight/obesity, and physical inactivity. Additional modifiable risk factors include psychosocial behaviors such as depression, anxiety/stress, anger, and hostility. Having more than one of these risk factors greatly increases the risk of heart disease and stroke.

Metabolic syndrome, the occurrence of a cluster of risk factors (obesity, diabetes, high blood pressure, certain types of fat in the blood) in the same individual, has received much attention. Whether or not the impact of these risk factors is synergistic or simply additive is currently being debated. However, virtually all experts agree that preventive measures that focus on lowering cholesterol and blood pressure levels, controlling blood glucose, stopping tobacco use, reducing obesity, and increasing physical activity can significantly lower the risk of developing cardiovascular disease.

Within CDPH, there are established programs targeting risk factors for heart disease and stroke, including the *California Diabetes Program*, the *Tobacco Control Section*, the *California Center for Physical Activity*, the *California Obesity Prevention Initiative*, *Project LEAN*, the *California Nutrition Network for Healthy Active Families*, and *School Health Connections*. The Task Force supports the efforts of these and other statewide programs and strongly encourages collaboration.

High blood pressure and high cholesterol are not specifically addressed in other plans developed by CDPH programs; therefore, the Task Force has developed strategies for these two risk factors. This Master Plan emphasizes the importance of screening individuals for high blood pressure and high cholesterol, as these conditions usually do not produce symptoms and people may not be aware that they are affected.

Note: In this document, the term “screening” refers to testing individuals who are at risk for, or who already have, high blood pressure and/or high cholesterol and providing the results to the screened individual along with an explanation of the results and a referral for treatment and follow-up.

“High blood pressure and high cholesterol are not specifically addressed in other plans developed by CDPH programs.”

GOAL # 1:

Improve prevention, early detection, treatment, and management of risk factors for heart disease and stroke.

Baseline data: In 1999, 92 percent of adult Californians had been screened for high blood pressure within the previous 2 years. In 2003, 69 percent of adult Californians had been screened for high cholesterol within the previous 5 years. (BRFS data)

Target 1: By 2010, 95 percent of adult Californians will have been screened for high blood pressure within the previous 2 years and 80 percent of adult Californians will have been screened for high cholesterol in the previous 5 years. [Healthy People (HP) 2010 goals]

Target 2: By 2010, 50 percent of adult Californians with high blood pressure will achieve recommended treatment goals and only 17 percent of adult Californians will have high cholesterol. (HP 2010 goals)

Heart Disease, Stroke, and Related Risk Factors Objective

Increase the number of Californians who:

- *Undergo regular screening for high blood pressure and high cholesterol.*
- *Know their blood pressure and cholesterol numbers.*
- *Lower, attain, and maintain recommended levels for blood pressure and cholesterol.*

Strategies for COMMUNITIES

Within three years:

- Collaborate with the American Diabetes Association to carry out the **ABC** Campaign to promote hemoglobin **A₁C** monitoring (**A**), blood pressure monitoring and control (**B**), and cholesterol monitoring and control (**C**) among people with diabetes.

Within five years:

- Compile and maintain statewide and regional resource directories for heart disease and stroke risk factor screening and follow-up treatment resources, including services that are accessible to the public at no cost or very low cost. Increase the network of organizations providing screening and treatment referral services by identifying and recruiting additional providers at fire stations, senior centers, drug stores, and places of worship.

- Promote the establishment and maintenance of the 211 number (a community services information line) as a resource to find heart disease and stroke risk factor screening and treatment referral services.
- Conduct a statewide education campaign on the importance of lifestyle changes and medication adherence in achieving blood pressure and cholesterol goals.

Model Program: The “GOAL Standard” campaign, sponsored by WomenHeart, the Association of Black Cardiologists, and AstraZeneca, is a national education campaign designed to highlight the importance of setting and achieving cholesterol goals.

Within ten years:

- Within communities, establish and assure support for community health education centers that are open to the public or through referral from primary care providers. Include community-based health educators, peer educators, parish nurses, social workers, dietitians, and/or pharmacists as staff to provide disease prevention and management support to clients. Community health education centers should:
 - Implement communication systems between primary care providers and the community health education center.
 - Provide education and group support.
 - Establish funding resources and sustainability options.
 - Include an outcomes evaluation component in the structure of the program.

Strategies for SCHOOLS _____

Within five years:

- Promote and support blood pressure screening of children by school nurses, including appropriate follow-up. Link community-based nursing organizations and nursing schools with school nurse programs to support screening activities and follow-up.
- Promote and encourage blood pressure and cholesterol screening by student health centers in colleges and universities as an entrance requirement.

Strategies for WORKPLACES _____

Within ten years:

- Encourage employers to arrange for screening and monitoring

A 10 percent decrease in total cholesterol levels may result in an estimated 30 percent reduction in the incidence of coronary heart disease.

-- MMWR, Vol. 49, No. 33, Aug. 25, 2000, CDC

of blood pressure, cholesterol, and diabetes in settings convenient to their employees. Promote heart disease and stroke risk factor screening by occupational health providers.

- Encourage employers to negotiate with health insurance companies or other healthcare organizations for decreased costs to employees (e.g., little or no co-pay) for prevention measures, such as cholesterol and blood pressure screening.

Strategies for HEALTHCARE SYSTEMS

Within three years:

- Encourage physicians to provide patients with a card (log) to record their blood pressure and cholesterol (both normal and abnormal results).
- Increase patient accountability by encouraging patients to ask their providers during each encounter about their blood pressure, cholesterol, height, and weight.
- Encourage broader use of materials (including posters, videos, Internet sites, and brochures) in provider offices to educate about risk factors for heart disease and stroke and to provide information about convenient community screening resources. Inform primary care providers about these materials and resources.

Within five years:

- Include blood pressure and cholesterol control education in rehabilitation programs for heart disease and stroke patients.
- Within the healthcare system, improve patient medication adherence and lifestyle change through:
 - Multidisciplinary teams of providers, including nurses, pharmacists, dieticians, and health educators.
 - Assignment of a primary case manager.
 - Self-management education and support (e.g., telephone recall and patient group visits).
 - Proven models of care (e.g., Chronic Care Model).

Within ten years:

- Increase incentives for individual participation in preventive health education programs and risk factor screening and management.

Model Program: The Inland Empire Health Plan offers patient incentives, such as gift certificates to local grocery stores, to attend diabetes classes and keep scheduled appointments with providers.

- Assure adequate funding for healthcare providers, systems, and plans to provide risk factor screening, management, and prevention education.
- Develop and support healthy parent/child programs that focus on heart disease and stroke risk factor reduction behaviors for children, targeting children with known cardiovascular disease and children whose parents have cardiovascular disease.
- Ensure that all children receive well-child exams, including screening for congenital heart anomalies, high blood pressure, and other cardiovascular risk factors.

POTENTIAL PARTNERS (See list of acronyms)

Community Strategies

Public (State/Federal): CDC, NIH/NHLBI, IHP, IHS, CRIHB

Public (County/local): Fire departments, Area Agencies on Aging, health departments

Nonprofit: AHA/ASA, NSA, ADA, philanthropies, mutual help groups (e.g., Mended Hearts), community health coalitions, faith-based organizations, WomenHeart

Clinical: Community clinics, medical societies, medically indigent adult programs, parish nurse associations, medical care systems/health maintenance organizations, ABC, La Raza, NHMA, CPA

Private: Pharmacies, media, drug and medical device companies

School Strategies

Public (State/Federal): Community college associations, UC and state universities, SHC, CDE

Public (County/local): School districts, school boards, parks and recreation departments, after-school programs

Nonprofit: AHA/ASA, NSA, PTA, child care associations, YMCA, Boys and Girls Clubs, chambers of commerce (Adopt-A-School Program), Cal SNA

Clinical: School nurse associations, AAP, AAFP, CNA

Private: Private college associations

Workplace Strategies

Public (State/Federal): CDPH, CDMHC

Public (County/local): Health departments

Nonprofit: Unions (e.g., CTA, SEIU, CNA), human resource professional associations, AHA/ASA, NSA, chambers of commerce, philanthropies, PBGH, AAOHN

Clinical: Occupational health organizations

Healthcare System Strategies

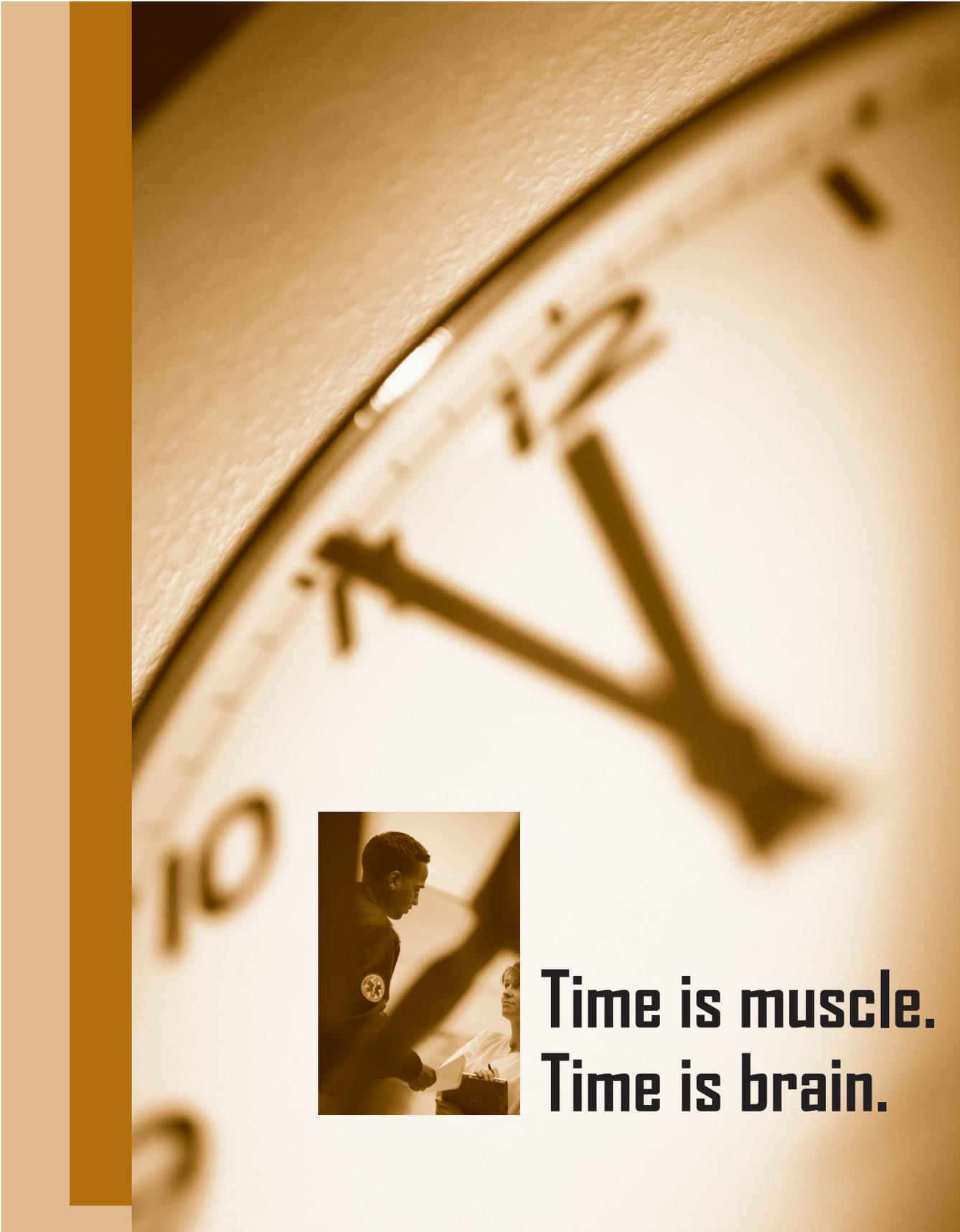
Public (State/Federal): MediCare/Medi-Cal, IHP, IHS, CRIHB

Public (County/local): Health departments

Nonprofit: AHA/ASA, First 5, March of Dimes, PBGH, The Leapfrog Group

Clinical: Community clinics, patient advocacy groups, ISBP, CMA, AMA, ABC, La Raza, NHMA, PCNA

Private: Third-party payors



**Time is muscle.
Time is brain.**

Recommendations for Acute Heart Disease and Stroke Management

Heart disease is the leading cause of death in California and a leading cause of disability. Acute coronary syndrome is a term used to represent conditions associated with lack of blood flow to the heart (ischemia), including the spectrum from unstable angina to acute myocardial infarction (AMI) or heart attack. AMI includes both non-ST segment elevation myocardial infarction (NSTEMI) and ST segment elevation myocardial infarction (STEMI), diagnosed by an electrocardiogram (EKG) and laboratory blood studies. All of these conditions are life-threatening. The longer oxygen deprivation to the heart muscle persists, the more heart muscle dies, and the more serious is the impact of the event on immediate and long-term survival and cardiac function.

Stroke is the third leading cause of death in California and a leading cause of disability. Stroke, sometimes called a “brain attack,” occurs when a portion of the brain is deprived of oxygen. This can be due to a clot that blocks a blood vessel in the brain (ischemic stroke) or to a rupture of a blood vessel (hemorrhagic stroke). In either case, oxygen does not reach the brain, and tissue dies rapidly, often resulting in disability or death. Stroke-like symptoms that occur for less than 24 hours are called transient ischemic attacks (TIA). TIA is a strong predictor of stroke, especially in the first 48 hours following a TIA.

Heart attack and stroke are treatable, life-threatening medical emergencies. Since life-saving therapies must be delivered within a narrow window of time, organized systems for heart attack and stroke care are being developed and implemented nationwide. These systems include written standards that permit hospitals to seek certification from the State, or some other certifying authority, as cardiac centers and/or stroke centers. These centers qualify to preferentially receive STEMI and stroke patients from emergency medical services (EMS) transporters who are trained to identify and triage patients in the field. Because of the decentralized nature of EMS transport service in California, transport of STEMI and stroke patients must be compliant with policies established by the Local Emergency Services Agencies (LEMSAs).

The idea of preferential transport of STEMI and stroke patients to hospitals that meet established criteria for excellence has gained traction in several states and in some parts of California. However, this

“Since life-saving therapies must be delivered within a narrow window of time, organized systems for heart attack and stroke are being developed and implemented nationwide.”

“Due to a lack of public awareness of the signs and symptoms of heart attack and stroke, many persons delay seeking care, resulting in needless disability and loss of life.”

model is not yet being adopted everywhere in the State, primarily due to a lack of resources and issues relating to access.

In addition, due to a lack of public awareness of the signs and symptoms of heart attack and stroke, many persons delay seeking care, resulting in needless disability and loss of life.

Task Force Considerations

The Master Plan aims to enable delivery of optimal care to all heart attack and stroke patients in California. In crafting this plan, the following realities were considered:

- Cardiac centers and stroke centers certified by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) are developing regionally in some urban centers.
- System change will be driven by the establishment of cardiac and stroke centers that have been certified by the State (CDPH) or by some other certifying body (e.g., JCAHO).
- With the establishment of certified cardiac and stroke centers, policy changes by LEMSAs have enabled transport of eligible patients to these centers.
- Not all hospitals have the resources (e.g., technology, disease expertise) to deliver comprehensive cardiac and stroke care.
- Cardiac and stroke treatments will likely change in the future, as will the associated “therapeutic window.”
- The public is not sufficiently aware of the urgency of the treatment time frames for heart attack and stroke and that the best course of action once symptoms are present is to call 911.

Recommendations in this area are guided by a commitment to:

- Implement evidence-based recommendations and guidelines.
- Raise the standard of care for all heart disease and stroke patients
- Promote quality improvement at all levels of care.
- Provide optimal care to every victim of heart disease and stroke.

The Vision for Heart Attack Care

Strategies to improve the timeliness of treatments that favorably impact outcomes from acute cardiac events are being developed. (1)

Recommendations include policies that increase the number of STEMI patients with timely access to percutaneous coronary interventions (PCI). This type of therapy requires catheterization laboratories (“cath labs”) where the artery-opening procedure can be performed. It is unrealistic (and, in fact, not cost-effective) to expect every hospital to build and staff a 24-hour cath lab. Therefore, ideal cardiac care would have eligible (STEMI) patients delivered preferentially to hospitals with 24-hour cath lab capability. This requires identification of eligible patients in the field, a process which is now possible using

ambulance-mounted 12-lead electrocardiograms (EKG) and electronic transmitting equipment. However, this type of care is expensive, and EMS personnel must be trained to properly use the equipment. Both availability of the equipment and training have been limiting factors.

Strategies in this Master Plan promote certification of cardiac centers, accurate assessment of AMI in the field, preferential transport of eligible patients to cardiac centers, and the assurance that the cardiac care system would be fully inclusive to avoid service gaps.

The Vision for Stroke Care

Advocates for improved clinical outcomes following stroke have recommended changes in the current medical system of care. In 2000, the Brain Attack Coalition recommended the establishment of “primary stroke centers” and “comprehensive stroke centers” as key elements of a care structure. (2,3) In 2005, the American Stroke Association issued a position statement urging the development of stroke care systems that coordinate and promote patient access to the services associated with prevention, treatment, and rehabilitation of stroke. (4)

This Master Plan reflects the national movement toward a stroke care system that provides optimal care to every stroke patient. The system proposed by the Master Plan requires identification of eligible stroke patients in the field and preferential transport to stroke centers. The backbone of the system would be formed by certified stroke center hospitals. The stroke center hospitals would be incentivized to form partnerships with hospitals that are unable to achieve certified stroke center status. The stroke center hospitals would provide neurology expertise via phone or telemedicine, stroke unit access, patient transfer, and other services that are needed by the partner hospital to provide optimal stroke care. These partnerships would be formalized by written agreements and protocols. This system would be fully inclusive in order to avoid service gaps; that is, every hospital would either be independently stroke-capable or stroke-capable through its partnership.

Ongoing Coordination as the Vision is Implemented

There are many technical and policy issues that must be resolved before the proposed STEMI and stroke treatment systems can be implemented. Therefore, the Task Force recommends the establishment of a Heart Attack System (STEMI) Work Group and a Stroke System Work Group. Each work group, comprised of statewide stakeholders, would establish implementation strategies and provide continuing guidance as the systems are rolled out in California.

“Every hospital would either be independently stroke-capable or stroke-capable through its partnership.”

Finally, the Task Force recognizes that the heart attack and stroke care systems cannot succeed unless the public recognizes the signs and symptoms of heart attack and stroke and then calls 911 for immediate medical attention. The community strategy, therefore, focuses on public education.

References:

1. Jacobs AK, Antman EM, Ellrodt G, et al. Recommendation to develop strategies to increase the number of ST-segment-elevation myocardial infarction patients with timely access to primary percutaneous coronary intervention: The American Heart Association's Acute Myocardial Infarction (AMI) Advisory Working Group. *Circ* 2006;113:2152-63.
2. Alberts MJ, Hademenos G, Latchaw RE, et al. for the Brain Attack Coalition. Recommendations for the establishment of Primary Stroke Centers. *JAMA* 2000;283:3102-26.
3. Alberts MJ, Latchaw RE, Selman WR, et al. for the Brain Attack Coalition. Recommendations for comprehensive stroke centers: a consensus statement from the Brain Attack Coalition. *Stroke* 2005;36:1597-616.
4. Schwamm LH, Panciolo A, Acker JE, et al. Recommendations for the establishment of stroke systems of care. Recommendations from the American Stroke Association's Task Force on the Development of Stroke Systems. *Stroke* 2005;36:690-703.

GOAL #2

Decrease death and disability from heart disease and stroke through early detection, treatment, and management of acute events.

Baseline Data: Not Available

Target 1: By 2015, 50 percent of adult Californians who undergo EMS transport and receive diagnostic evaluation for AMI and stroke will receive treatment within the recommended therapeutic time-windows, currently 90 minutes for AMI and 180 minutes for ischemic stroke. (Expert Panel)

Heart Disease and Stroke Objective

Improve emergency medical response and treatment for acute myocardial infarction (AMI) and stroke.

Strategies for COMMUNITIES

Within three years:

- Ensure that the public is aware that heart attack and stroke are medical emergencies and that 911 should be called within minutes of symptom onset.

Strategies for HEALTHCARE SYSTEMS

Within three years:

- At all hospitals, improve the treatment of heart attack and stroke through the use of standardized written protocols that reflect current evidence-based recommendations for acute disease management.
- Identify hospitals that serve as geographical/regional treatment centers and provide incentives for these hospitals to become certified cardiac centers and/or certified stroke centers.
- Identify hospitals that have the resources to be nearly ready for certification as a cardiac or stroke center and encourage them to complete the process.

Model Program: American Stroke Association's "Acute Stroke Treatment Program" is a comprehensive tool kit designed to help stroke center directors, hospital providers, and staff establish a primary stroke center.

- Ensure that continuing education units for health professionals are mandated as part of the process for cardiac center or stroke center certification.
- Encourage protocol changes for LEMSAs in order to optimize:
 - Identification of patients with STEMI (using 12-lead EKG)
 - Identification of stroke/TIA patients (using validated, standardized tools).
 - Data collection (time of onset of symptoms).
 - Preferential triage to certified cardiac and stroke hospitals.

Within five years:

- Collaborate with LEMSAs to coordinate a system of EMS transport to increase access to cardiac and stroke centers.

Heart attack can cause extensive and permanent damage to the heart, leading to reduced heart function.

--Mayo Foundation for Medical Education and Research, 2005

- Develop a statewide telemedicine infrastructure (phone-based and/or Web-based) that will enable cardiology and neurology consultations between remote/rural sites (“spokes”) and heart attack and stroke centers (“hubs”). Create incentives for hospitals at both hub and spoke sites to form formal partnerships that facilitate participation in telemedicine systems.
- For STEMI and stroke patients who do not go directly to a certified cardiac or stroke hospital and cannot be linked to a telemedicine consult, create and encourage linkages for rapid inter-hospital transports for a higher level of care (e.g., 24-hour catheterization labs for STEMI, neurosurgery for hemorrhagic stroke or complicated ischemic stroke).

Heart Disease-Specific Objective

Improve the public’s ability to respond appropriately to sudden cardiac arrest.

Within three years:

- Promote adult and pediatric cardiopulmonary resuscitation (CPR) classes and training, as well as placement of automated external defibrillators (AEDs) in public places throughout the State.
- Encourage employers to designate emergency response teams who are trained in CPR and AED as a bridge to EMS assistance.

Heart Disease-Specific Objective

Develop the infrastructure needed to implement the Task Force’s vision for optimal heart attack care.

Within three years:

- Establish a Heart Attack (STEMI) System Work Group, consisting of stakeholders in heart disease prevention and treatment, to address the development of a statewide heart attack care system, with the goal of delivering optimal care to all Californians.
- Conduct regional AMI conferences to plan for the development of regional cardiac care systems.

Within five years:

- Equip and train EMS response units to perform 12-lead EKG for suspected AMI patients, and standardize the use of the EMS 12-lead EKG in emergency rooms.

Stroke-Specific Objective

Develop the infrastructure needed to implement the Task Force's vision for optimal acute stroke care.

Within three years:

- Establish a Stroke System Work Group, consisting of stakeholders in stroke prevention and treatment, to address the development of a statewide stroke system, with the goal of delivering optimal care to all Californians.
- Conduct regional stroke conferences to plan for the development of regional stroke systems of care.

Within five years:

- Improve the ability of all hospitals (even those that are not certified stroke centers) to provide optimal care for in-hospital strokes; enable communication with certified stroke centers.
- Improve the ability of emergency medical dispatchers (EMDs) (through both protocol development and education) to identify suspected stroke and dispatch EMS transporters under emergency status.
- Promote regional stroke networks (including surrounding states) to share prevention strategies and partnership opportunities.

*During a stroke,
1.9 million
nerve cells die
each minute,
and the brain
ages 3.6 years for
each hour it is
deprived of
oxygen.*

--Stroke 2006;37:263-6

POTENTIAL PARTNERS (See list of acronyms)

Heart Disease and Stroke Objective

Community Strategies

Public (State/Federal): CDPH

Public (County/Local): Health departments

Nonprofit: AHA/ASA, NSA, Stroke Association of Southern California, SAF, PSA, CAA, California Rescue and Paramedic Association

Healthcare System Strategies

Public (State/Federal): CDPH, EMSA, CCLHO, OSHPD, IHP, IHS, CRIHB

Public (County/Local): LEMSAs, fire departments

Nonprofit: AHA/ASA, NSA, Stroke Association of Southern California, SAF, PSA, EMDAC, EMSAAC

Clinical: CHA, ACN, Cal ACEP, CENA, CRHPC, CAA, California Rescue and Paramedic Association, ACHD, CTEC, AANN, California NeuroAlliance, Lumetra

Private: Third-party payors

Heart Disease-Specific Objectives

Public (State/Federal): CDPH, EMSA, CCLHO, OSHPD, IHP, IHS, CRIHB

Public (County/Local): LEMSAs, health departments

Nonprofit: AHA, ARC, EMDAC, EMSAAC, AHA Community Training Centers

Clinical: CHA, ACC California Chapter, Cal ACEP, CENA, CRHPC, CAA, California Rescue and Paramedic Association, ACHD, PCNA, Lumetra

Private: Philanthropies, AED device companies

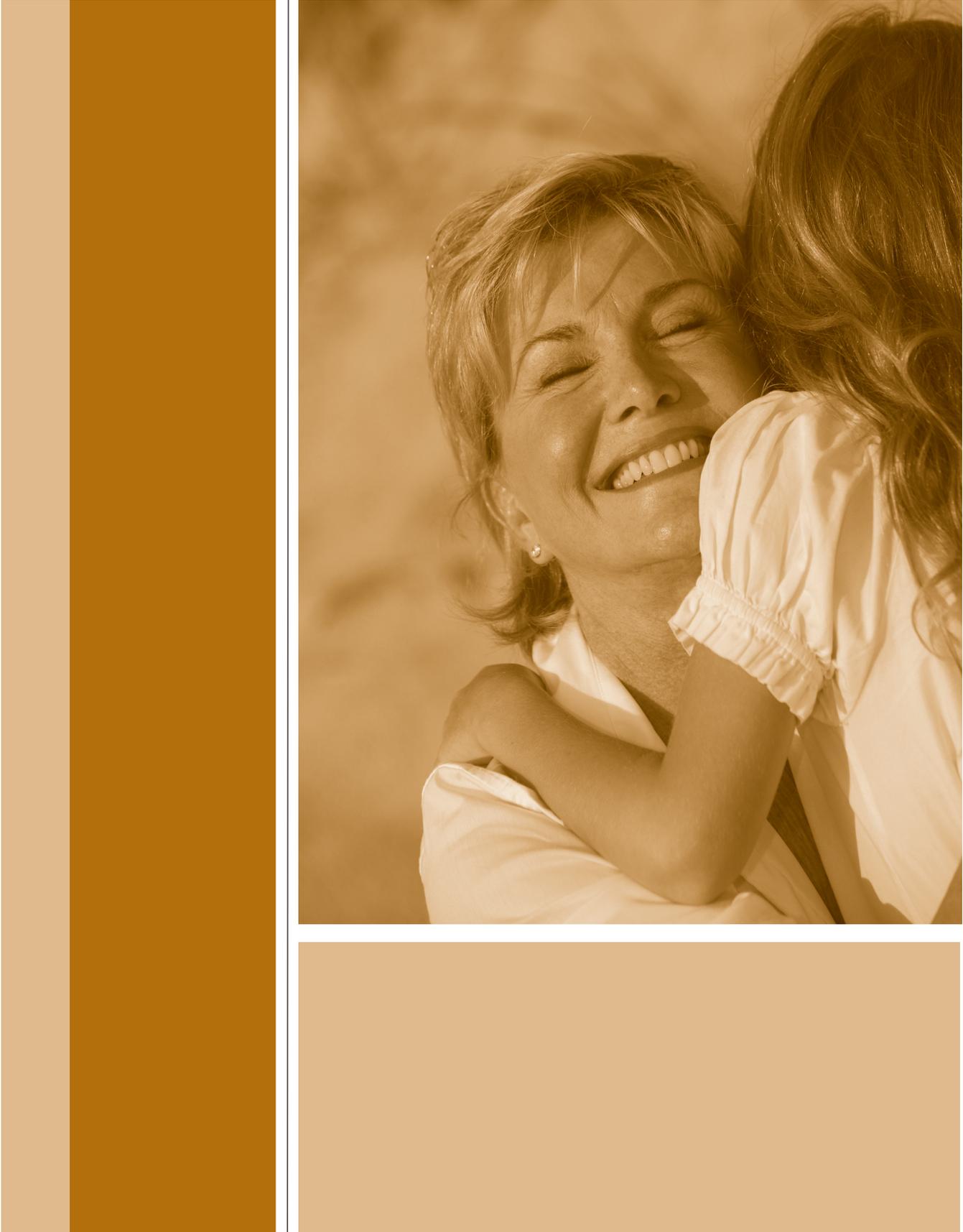
Stroke-Specific Objective

Public (State/Federal): CDPH, EMSA, CCLHO, OSHPD, IHP, IHS, CRIHB

Public (County/Local): LEMSAs

Nonprofit: ASA, NSA, Stroke Association of Southern California, SAF, PSA, EMDAC, EMSAAC

Clinical: CHA, ACN, Cal ACEP, CENA, CRHPC, CAA, California Rescue and Paramedic Association, ACHD, Lumetra



Recommendations for Chronic Disease Management

People who survive a heart attack or stroke are at high risk for a recurrent CVD event and chronic cardiovascular disease. Research has identified effective prevention strategies, including appropriate medications, to reduce the risk of a second event. Proven medications and effective lifestyle changes are outlined in current evidence-based guidelines; however, these guidelines are not consistently applied unless they are systematized (i.e., captured in written protocols, preprinted orders, and decision-support tools). Advances have been made in chronic disease management, including programs to enhance compliance with evidence-based prevention guidelines.

In the post-hospital phase of treatment, long-term rehabilitation has been shown to reduce disability and mortality, but rehabilitation services are usually short-lived due to lack of resources and to the existence of policies that limit reimbursement. In addition, rehabilitation services are not widely available and experience low participation rates, particularly by women. This Master Plan proposes that these resources be expanded and policies changed.

Designation of heart attack and stroke centers for acute treatment will include consideration of the post-acute treatment phase. Designated centers will integrate acute and rehabilitative care with multidisciplinary teams of providers. This section of the Master Plan recommends strategies that will establish the system changes needed to consistently deliver the highest quality of care in chronic disease management.

“Guidelines are not consistently applied unless they are systematized.”

GOAL # 3:

Improve chronic disease management of heart disease and stroke.

Baseline data: See *Profile of Heart Disease and Stroke in California*, page 5.

Target 1: By 2010, decrease mortality from heart disease to 167.2/100,000* and decrease hospitalizations from heart disease to 14.9/1,000. (HP 2010 goal-setting methodology)

* The Task Force recognizes this target has been exceeded and recommends a new 2010 heart disease mortality target of 100/100,000.

Target 2: By 2010, decrease mortality from stroke to 47.2/100,000 and decrease hospitalizations from stroke to 5.8/1,000.** (HP 2010 goal-setting methodology)

** The Task Force recognizes this target has been met and recommends a 2010 stroke mortality target of 4.6/1,000.

Target 3: By 2010, decrease mortality from heart failure to 7.5/100,000 and decrease hospitalizations from heart failure to 7.7/1,000. (Consistent with HP 2010 goal-setting methodology)

Heart Disease and Stroke Objective

Reduce morbidity and mortality from heart disease and stroke by improving the quality of care delivered to patients during hospitalization and rehabilitation, including measures after hospitalization for prevention of recurrent events.

Strategies for COMMUNITIES

Within five years:

- Encourage development of community-based heart disease and stroke support groups, as well as heart disease and stroke survivor visitor programs in hospitals and rehabilitation facilities. Educate about strategies for recovery and prevention of a second event.

Model Programs: The National Stroke Association's "Discovery Circles" is a guide to organizing and facilitating Stroke Support Groups.

The American Stroke Association's "National Stroke Group Registry" lists over 1,800 registered stroke support groups across the country.

Strategies for HEALTHCARE SYSTEMS

Within three years:

- Support hospital system changes that promote prevention of recurrent events in heart attack and stroke survivors (secondary prevention), including:
 - Use of written protocols.
 - Discharge of heart attack, heart failure, and stroke patients on medications recommended by evidence-based guidelines and referral to counseling on diet, smoking, and other lifestyle issues.
 - Use of quality improvement tools that strengthen acute care, as well as secondary prevention of AMI and stroke and recurrent hospitalization for heart failure.

Model Program: American Heart Association (AHA)'s "Get With the Guidelines" is an acute care hospital-based quality improvement tool that helps manage risk factors in hospitalized patients.

- Assure availability and viability of in-hospital rehabilitative care units dedicated solely to heart disease and stroke survivors, as well as long-term rehabilitation for AMI, heart failure, and stroke survivors.
- Using appropriate and culturally sensitive patient education, encourage all Californians to have an Advance Directive for Health.

Within five years:

- Identify best practice disease management models for the structure of medical practices. Examples include:
 - Multidisciplinary teams.
 - Case managers.
 - Information technology that supports patient monitoring and follow-up.
 - Telephone recall.
 - Patient group visits.
 - Standing orders, clinical care pathways.
 - Self-management support groups.Promote implementation through continuing education classes, lectures (e.g., hospital grand rounds), local medical association meetings, and technical assistance for provider office staff.
- Implement a score/report card system and:
 - Encourage healthcare providers to provide score/report cards for people with heart disease, including heart failure, and stroke to monitor weight, blood pressure, and cholesterol.

People with heart disease should strive for an LDL cholesterol of 70 mg/dL or lower.

*--ATP III Update, 2004
Circulation.
2004;110:227-39*

Each incremental increase of 20 mmHg in systolic blood pressure or 10 mmHg in diastolic blood pressure doubles the risk of cardiovascular disease across the entire blood pressure range from 115/75 to 185/115 mmHg.

*-- JNC 7 Express
NIH Publication
No. 03-5233
December 2003*

- Provide incentives for people to achieve and maintain desirable levels of cholesterol, blood pressure, and other risk factors. Incentives could include vouchers for co-pays, decreased medication costs, or other compensation.
- Encourage self-efficacy and responsibility for health promotion.
- Provide rehabilitation professionals with educational materials for heart attack, heart failure, and stroke survivors and their families.

Model Program: American Stroke Association's "Starting Now" explains how to implement a five-lesson education course for stroke survivors.

Within ten years:

- Ensure the viability of discharge planning that is focused on chronic conditions, including heart disease, heart failure, and stroke.
- Establish a referral network with support groups and/or peer visitor programs for patients who have experienced an AMI or stroke.
- Promote insurance coverage of home monitoring equipment (e.g., blood pressure cuffs) as a means of decreasing the costs associated with readmission to hospitals.
- Encourage referrals to behavior change experts (e.g., dieticians, exercise physiologists, smoking cessation counselors) who are able to facilitate lifestyle changes following hospital discharge for heart attack, heart failure, or stroke; assure health plan reimbursements for these activities.

Heart Disease-Specific Objective

Reduce hospital readmissions and extend quality of life for heart disease, including heart failure, patients.

Strategies for HEALTHCARE SYSTEMS

Within ten years:

- Reduce the number of hospital readmissions for heart disease and heart failure, by developing outpatient care models that include:
 - A team approach that is inter- and multi-disciplinary, including health educators, dieticians, pharmacists, and peer educators.
 - Recognition of and deference to cultural and social factors that may impact the care of a patient.
 - A referral network and support groups.

- Ensure the viability of funding for care systems that enable appropriate monitoring of heart failure patients at home in an effort to improve patient care and reduce hospital readmissions.

Model program: TeleHome Care, a University of Minnesota project, provides virtual home visits combining telemedicine and home monitoring of physiological variables in an effort to deliver improved home health care to people with heart failure or other chronic diseases at reduced cost. TeleHomeCare uses low-cost videoconferencing technology, the Internet, physiological monitoring connected to TV and voice-grade telephone lines to supplement traditional home health services. Evaluation of this project is supported by the federal Department of Commerce National Telecommunications and Information Administration with matching funds from the state of Minnesota.

Stroke-Specific Objective

Improve independence and quality of life for stroke survivors.

Strategies for COMMUNITIES

Within five years:

- Increase access to and ensure viability of funding for comprehensive community-based rehabilitation services using licensed speech, physical, and recreational therapists.
- Reduce fall risk among community-dwelling stroke survivors by encouraging the development and testing of community-based exercise programs that are targeted to stroke survivors to improve their flexibility, balance, and strength.

Model Program: Stanford University Trauma Center's "Farewell to Falls" program works with older adults to reduce fall risk.

Strategies for HEALTHCARE SYSTEMS

Within ten years:

- Reduce fall risk among stroke survivors living in skilled nursing facilities by encouraging development and testing of exercise programs that are targeted to stroke survivors to improve their flexibility, balance, and strength.

POTENTIAL PARTNERS (See list of acronyms)

Heart Disease and Stroke Objective

Community Strategies

Nonprofit: Mutual help groups (e.g., Mended Hearts), AHA/ASA, NSA, SAF, PSA, Stroke Education Council of Marin, Stroke Association of Southern California, community health coalitions

Clinical: Stroke centers, heart attack centers, CSRC

Healthcare System Strategies

Public (State/Federal): CDMHC, COPE, EPIC

Nonprofit: IHA, AHA/ASA, NSA, CMA, PBGH, CDA

Clinical: Hospital systems, CAPG, Lumetra, Stroke Recovery Center

Private: Third-party payors

Heart Disease-Specific Objective

Public (State/Federal): Heart Attack System Work Group

Nonprofit: HFSA, CAPG, AHA

Clinical: CPA, IHA

Stroke-Specific Objective

Community Strategies

Public (State/Federal): C DPR, California Center for Physical Activity, COPE, EPIC

Nonprofit: ASA, NSA, PSA, Stroke Association of Southern California, Stroke Education Council of Marin, Archstone Foundation

Clinical: Stanford University's Farewell to Falls Program, Stroke Recovery Center (Palm Springs)

Healthcare System Strategies

Public (State/Federal): Stroke System Work Group, CDMHC, Office of the Patient Advocate

Nonprofit: PSA, Archstone Foundation, Stroke Association of Southern California, IHA, AHA

Clinical: Lumetra, CHA, CAPG, OTAC, CPTA



*If it could be a stroke
or heart attack....*

CALL 911



Recommendations for Public Education

Public education is one of the most effective ways to prevent and treat heart disease, stroke, and related risk factors. This section of the Master Plan outlines approaches to address the need for improved public education, especially among priority populations.

Heart disease, stroke, and related risk factors are often preventable. Educating the public about risk factors for heart disease and stroke is critical in the prevention and management of these conditions. Modifiable risk factors for heart disease and stroke include: high cholesterol, high blood pressure, diabetes, tobacco use, overweight/obesity, and physical inactivity. These risk factors are impacted by lifestyle modifications, such as increasing physical activity; maintaining a healthy weight; preventing and treating diabetes; not smoking; and eating a diet low in fat, salt (sodium), and cholesterol. Because of their effectiveness, these are known as therapeutic lifestyle changes (TLC). Once a person has been affected by heart disease or stroke, it is important to adhere to a healthy lifestyle and to comply with treatments involving prescription medications.

A public education campaign about risk factors for heart disease and stroke should include the following messages:

- Know your risk factors.
- Know your numbers (blood pressure and cholesterol).
- Know what lifestyle modifications reduce risk.
- Know that adherence to medication regimens is important.

The ability to recognize the signs and symptoms of heart attack and stroke is crucial to receiving timely treatment, which increases the chance of survival and minimizes the potentially debilitating effects of these events. Important information about how to recognize a heart attack or stroke and how to respond are key messages for a public education campaign and need to include the following:

- The “Chain of Survival” for heart attack and sudden cardiac arrest, which includes:
 - Recognition of a cardiac emergency.
 - Calling 911 immediately (“time is muscle”); treatment begins with the arrival of EMS (EMS brings the emergency room to the patient).

“Public education is one of the most effective ways to prevent and treat heart disease, stroke, and related risk factors.”

“Educational materials and campaigns must be culturally sensitive, language-appropriate, and presented at the literacy level of the intended audience.”

- Initiation of CPR through use of rapid and forceful chest compressions.
- Use of an automated external defibrillator (AED).
- Public education should focus on the following five critical messages for heart attack:
 - Heart disease is the leading cause of death.
 - Heart disease is preventable.
 - Signs and symptoms of heart attack.
 - Risk factors for heart disease.
 - Time-sensitive window for EMS/treatment response.
- Public education should focus on the following five critical messages for stroke:
 - Stroke is the third leading cause of death.
 - Stroke is preventable.
 - Signs and symptoms of stroke.
 - Risk factors for stroke.
 - Time-sensitive window for EMS/treatment response (i.e., in the event of a stroke, call 911 immediately, since “time is brain”); treatment begins with the arrival of EMS (EMS brings the emergency room to the patient).

Educational materials and campaigns must be culturally sensitive, language-appropriate, and presented at the literacy level of the intended audience. Materials should particularly target high-risk racial/ethnic groups (i.e., Hispanics, African Americans, and American Indians) and women. In addition, public education should be presented in a variety of venues throughout the community and should be communicated using multiple forms of media.

GOAL # 4:

Decrease death and disability from heart disease and stroke through public education.

Baseline data: Approximately 85 percent of adults know at least three of the warning signs of a heart attack, and approximately 65 percent of adults know at least three of the warning signs of a stroke; approximately 87 percent of adults indicate that they know to call 911 when someone appears to be having a heart attack or stroke.

* These data points are approximations for California adults based on data collected in other states, including estimates based on responses to multiple questions.”

Target 1: By 2015, increase by ten percent the proportion of California adults who will be able to do each of the following: identify the warning signs of a heart attack, identify the warning signs of a stroke, and know to call 911 when someone appears to be having a heart attack or stroke.

Heart Disease, Stroke, and Related Risk Factors Objectives

1. *Increase public awareness of risk factors for heart disease and stroke, including lifestyle changes to improve health outcomes.*
2. *Increase public awareness of the early warning signs and symptoms of heart attack and stroke and the need to call 911 immediately.*

Strategies for COMMUNITIES

Within three years:

- Educate the public about the benefits of lifestyle modifications for the treatment of high blood pressure and high cholesterol.
- Educate the public about the benefits of medications for the treatment of high blood pressure and high cholesterol, even when there are no symptoms of disease. Change public perception that being “symptom-free” is equal to being healthy.
- Promote intervention programs for patients and their family members that make use of “teachable moments,” defined as the time after a heart attack or stroke.
- Promote national high blood pressure and cholesterol educational campaigns and ensure that they are implemented statewide.

Only 50 percent to 60 percent of stroke victims arrive at the hospital by ambulance.

--Circulation

Within five years:

- Promote the use of health educators, face-to-face peer educators, and “train-the-trainer” programs within communities to increase public education on heart disease, stroke, and related risk factors. Encourage private foundations to adopt this model as a criterion for funding awards.
- Make high blood pressure and cholesterol educational materials, as well as information on signs and symptoms of heart attack and stroke, available in public locations, such as the Department of Motor Vehicles, public libraries, senior centers, senior advocacy groups, health departments, pharmacies, community clinics, county public health offices, and Area Agencies on Aging.
- Conduct comprehensive heart disease and stroke seminars, as well as risk factor screenings and follow-up, where high-risk populations may gather (e.g., senior centers, retirement communities, assisted living facilities, places of worship, community clinics, women’s health groups) using both “train-the-trainer” models and direct education models.
- Conduct a large-scale multi-media campaign for heart disease, stroke, and related risk factors, including signs and symptoms of heart attack and stroke, the importance of calling 911 immediately, and the need to “Know Your Numbers.” Campaign should include use of:
 - o Television and radio public service announcements that are available in the languages spoken by target audiences.
 - o Print media.
 - o Specialty media such as grocery store and pharmacy bags that are imprinted with messages on risk factor reduction, heart health, and stroke prevention.
- Partner with the entertainment industry to include accurate heart disease and stroke information in television and movie story lines.

Model Program: The Center for Disease Control and Prevention’s (CDC) “Hollywood, Health & Society” program supplies writers and producers of entertainment content with accurate health information through individual and group information briefings, a quarterly newsletter with health updates called “Real to Reel,” and tip sheets written specifically for writers and producers.

Within ten years:

- Advocate for the inclusion of one question on the California driver's examination that would measure knowledge of the risk to public safety that occurs when someone who is experiencing heart attack symptoms decides to drive to the emergency room instead of calling an ambulance.
- Develop and/or support collaborations that connect organizations, programs, advocates, and resources that focus on healthy eating, physical activity, tobacco cessation, and weight management. Specific heart disease and stroke prevention strategies for these collaborations may include:
 - Promoting safe walkable/bikeable communities and ensuring pathway/bike lane continuity and connectivity.
 - Encouraging each city/jurisdiction to incorporate walkability in new plans (e.g., building/construction/subdivision) and safe routes to schools.
 - Encouraging five to nine daily servings of fruits and vegetables.
 - Promoting farmers' markets, especially in communities where there is limited access to fruits and vegetables.
 - Addressing transportation barriers that inhibit access to markets and shops selling fresh fruits, vegetables, and whole grains.
 - Prohibiting the promotion of tobacco to minors and decreasing exposure to second-hand tobacco smoke, both indoors and outdoors.
 - Targeting heart disease and stroke risk factor education for people with diabetes, who, by virtue of their diabetes, are at increased risk of cardiovascular disease.
- Promote existing and develop new (as needed) educational web sites with health-related information and resources for heart disease, stroke, and related risk factors. Information provided should include links to low-cost healthcare providers for uninsured/underinsured individuals, as well as health information for individuals who are newly diagnosed with heart disease, stroke, or a related risk factor.
- Develop a speakers' bureau on heart disease, stroke, and related risk factors and offer speakers' services to community organizations, schools, and local radio and television producers.
- Provide incentives for food service establishments to offer menus that indicate fat, calorie, and sodium content of menu selections and serve portion sizes that are consistent with recommended quantities of these items.

Strategies for SCHOOLS

Within three years:

- Educate students to call 911 if an adult develops signs and symptoms of a heart attack or stroke.

Model Program: National Institutes of Health’s “Kids Identifying and Defeating Stroke” (KIDS) Project — an education program for middle schools that includes 12 hours of instruction about stroke over three years, as part of the student health curricula.

Within ten years:

- Develop a heart health and stroke campaign (including a toolkit with key messages and social marketing tools) to be used on school campuses. Promote the campaign through student clubs, PTAs, and other organizations, enabling the dissemination of the heart disease, stroke, and related risk factor messages to peers. To maximize the effectiveness of communication, engage heart disease and stroke survivors.
- Promote parent/family/community education regarding health promotion, nutrition, heart healthy food choices, and signs and symptoms of heart disease and stroke at traditional school events, including book fairs, concerts, “Back to School Night,” and open house. Ensure that materials are translated into the languages spoken in the home and adapt recipes so that they are consistent with home culture and traditional food products.
- Develop and implement basic lesson plans, starting in first grade, on heart disease, stroke, and related risk factors. Engage local medical professionals and peer heart disease and stroke survivors in educational opportunities within the classroom. Link campaigns with other health education programs, such as those targeting obesity.
- Implement worksite heart disease, stroke, and related risk factor education for school employees through school district offices, including signs and symptoms of disease and importance of time-dependent treatments.

Strategies for WORKPLACES

Within five years:

- Encourage large purchasers of health insurance (such as governmental organizations and large companies) to request

specific information from health plans about quality of care for heart disease, stroke, and related risk factors that will be used in making decisions about which plans to offer employees.

- Incorporate information about heart disease, stroke, and related risk factors into existing and/or proposed employee insurances, health education programs, and newsletters.
- Develop or use existing electronic health education material on risk factors for heart disease and stroke and transmit these messages electronically (e.g., as part of an E-mail signature block or weekly health tip) to employees within organizations.

Within ten years:

- Sponsor a Heart Disease and Stroke Workplace Conference inviting CEO's, CFO's, risk managers, and human resource representatives, including individuals who negotiate healthcare benefits for large employers. The conference will include a cost-benefit analysis of heart disease and stroke prevention, symptom recognition, primary and secondary prevention education for attendees, and appropriate train-the-trainer education/screening programs that can be implemented within each company.
- Educate company risk managers about the cost of heart disease, stroke, and related risk factors in the workplace, including years of productive life lost, absenteeism, and increased health insurance premiums.

Model Program: HealthyFresno is a community-wide initiative striving to improve health and prevent chronic disease in the Fresno community. Its workplace component offers tools and resources to employers and employees that encourage them to become advocates for health and wellness in the workplace.

Strategies for HEALTHCARE SYSTEMS _____

Within five years:

- Identify public education modules on heart disease, stroke, and related risk factors (in multiple languages) that can be used by hospitals and clinics to educate patients.
- Encourage hospitals to satisfy their community benefit requirements by educating people in their service areas about heart attack and stroke signs and symptoms, as well as risk factors.

POTENTIAL PARTNERS (See list of acronyms)

Community Strategies

Public (State/Federal): CDPH programs (Nutrition Network, Project LEAN, California Center for Physical Activity, California Diabetes Program, Tobacco Control Section, CHDSP); First 5; California Department of Aging; CCLHO; CDMV; CDC's Hollywood, Health & Society Program

Public (County/local): Health departments, public libraries, peer education programs, community colleges, community clinics, fire departments, ambulance services

Nonprofit: AHA/ASA, ADA, NSA, AARP, faith-based organizations, PSA, Stroke Education Council of Marin, Stroke Association of Southern California, SAF, Ad Council, IOM

Clinical: Emergency physicians, primary care physicians, physician assistants, family nurse practitioners, cardiologists, neurologists, PCNA, medical societies

Private: Restaurants and other food businesses (including fast food chains), grocer associations, grocery store chains

School Strategies

Public (State/Federal): CDPH, CDE, CTA

Public (county/local): School boards, school districts, health departments

Nonprofit: AHA/ASA, NSA, PTA

Clinical: Medical societies, neurologists, cardiologists, sports medicine physicians

Workplace Strategies

Public (State/Federal): CDPH, Cal PERS, CDMHC

Nonprofit: RWJF, chambers of commerce, AHA/ASA, NSA, IHA, PBGH, The Leapfrog Group, human resources professional associations

Healthcare System Strategies

Public (State/Federal): PHCA

Nonprofit: AHA/ASA, PSA, SAF, Stroke Association of Southern California, Stroke Education Council of Marin, NSA, WomenHeart, ACC



Recommendations for Education of Healthcare Professionals

In conjunction with public education, education of healthcare professionals is critical in the prevention and treatment of heart disease and stroke. Healthcare professionals include physicians, nurses, EMS providers, physician assistants, pharmacists, medical assistants, certified nursing assistants, physical and occupational therapists, and all other members of the healthcare team. This section of the Master Plan includes strategies to enhance professional education on heart disease and stroke. These strategies are based on the following key goals:

- Include practice-appropriate information on heart disease and stroke in training programs for all healthcare professionals.
- Provide continuing education to inform practicing healthcare professionals of updates made to evidence-based guidelines for heart disease and stroke prevention and treatment.
- Develop and disseminate health education resources on heart disease and stroke to healthcare professionals.
- Improve effective communication between patients and healthcare providers.

Professional education should include the following critical messages about:

- Risk factors for heart disease and stroke:
 - Updated guidelines for the treatment of high blood pressure (JNC 7) recommend “desirable” blood pressure as less than 120/80 mm/Hg.
 - Children over three years of age who are seen in medical care settings should have their blood pressure measured at least once during every healthcare visit.
 - Updated guidelines for the treatment of high cholesterol include recommendations to lower LDL cholesterol to less than 70 mg/dL for high-risk patients (including people with diabetes).
- Heart disease:
 - Heart disease is the leading killer among men AND women.
 - Heart disease symptoms may manifest differently in women than men.
 - Heart disease is often preventable.
 - Acute coronary syndromes are medical emergencies with effective time-sensitive treatments available.

“In conjunction with public education, education of healthcare professionals is critical in the prevention and treatment of heart disease and stroke.”

- Stroke:
 - Stroke is a medical emergency; there are effective time-sensitive treatments available.
 - Effective secondary prevention measures have been demonstrated.

GOAL # 5:

Decrease death and disability from heart disease and stroke through the education of healthcare professionals.

Baseline data: In 2005, approximately 80 percent* of adult Californians in HMOs had their cholesterol checked after a heart attack or other serious heart problem or surgery, and cholesterol levels for approximately 70 percent* of adult Californians in HMOs were well-controlled after a heart attack or other serious heart problem or surgery.

* Estimates based on multiple data sources.

No data available on high blood pressure.

Target 1: By 2015, 90 percent of adult Californians will have had their blood cholesterol checked after a heart attack or other serious heart problem or surgery, and 80 percent of adult Californians' cholesterol levels will be well-controlled after a heart attack or other serious heart problem or surgery.

Target 2: By 2015, 80 percent of adult Californians' blood pressures will be well-controlled after a heart attack or other serious heart problem or surgery.

Heart Disease, Stroke, and Related Risk Factors Objective

Increase awareness of and adherence to evidence-based guidelines and established protocols for prevention and management of heart disease, stroke, and related risk factors.

Strategies for PROFESSIONAL SCHOOLS _____

Within ten years:

- Review the curriculum on heart disease, stroke, and related risk factor prevention and treatment in schools offering degree programs in the healthcare professions (medical, dental, nursing) and recommend standardized instruction on practice-appropriate guidelines, guideline updates, and critical messages.

- Encourage Certified Nursing Assistant and Medical Assistant training programs to include a module in the core curriculum on heart disease, stroke, and related risk factors, including the science, rationale, and need for screening for heart disease and stroke risk factors.

Strategies for HEALTHCARE SYSTEMS _____

Within three years:

- Increase clinician awareness (particularly among primary care providers, including obstetricians and gynecologists) of heart disease as the leading killer among women, the tendency for greater delay by women in seeking care for heart attack, and the risk of stroke during pregnancy.
- Promote heart disease, stroke, and related risk factors as topics for hospital and community grand rounds. Create a list of available experts willing to deliver presentations and a list of partner organizations willing to sponsor the talks. Consider using distance learning to reach remote areas via telemedicine technology.
- Educate healthcare providers to assess health literacy -- the ability to read, understand, and act appropriately on health information -- and use tools available to address health literacy challenges when communicating with and educating patients.

Within five years:

- Sponsor a Heart Disease and Stroke Conference that focuses on emerging strategies for better patient care.
- Work with home healthcare providers to assure that both licensed and unlicensed in-home health workers are trained to recognize heart attack and stroke in their patients and to call 911 immediately.
- Prepare and distribute tool kits on prevention and management of heart disease, stroke, and related risk factors for primary care providers (internists, physician assistants, nurse practitioners, obstetricians, gynecologists, family practitioners). Include practice guidelines, information on heart disease and stroke risk, and copy-ready patient education handouts.
- Work with the California Association of Health Plans, as well as individual health plans, to include heart disease, stroke and related risk factor prevention and treatment guidelines in their communications with providers.

Individuals with a systolic blood pressure of 120-139 mmHg or a diastolic blood pressure of 80-89 mmHg should be considered hypertensive and require health promoting lifestyle modifications to prevent heart disease and stroke.

*-- JNC 7 Express
NIH Publication
No. 03-5233
December 2003*

- Encourage organizations representing medical professionals to include heart disease, stroke, and related risk factor prevention and management in their annual conferences, with particular emphasis on current evidence-based guidelines.

Within ten years:

- Promote health literacy training, particularly as it applies to heart disease, stroke, and related risk factors.

Model Program: The American Medical Association’s “Health Literacy, Help Your Patients Understand” program provides the tools necessary for physicians to increase health literacy (a patient’s ability to obtain, process, and understand basic health information). Improved health literacy enhances patient care and reduces healthcare costs.

- Prepare and distribute Web-based heart disease and stroke education modules for provider teams at hospitals certified by JCAHO to deliver specialized heart and stroke care; modules can be used to satisfy the continuing education requirements associated with JCAHO certification.

Heart Disease-Specific Objective

Improve health outcomes from heart disease through the education of health professionals.

Within three years:

- Improve the treatment of heart attack through the use of standard written protocols addressing evidence-based recommendations for the management of heart attack and secondary prevention strategies, including tobacco cessation, referrals to cardiac rehabilitation and use of recommended discharge medications (to include the routine use of aspirin, cholesterol-lowering medications, beta-blockers, and ACE/ARB); monitor hospitals for compliance with utilization and implementation of these guidelines.
- Increase clinician awareness of gender differences in heart disease symptoms (e.g., more subtle in women) and treatment modalities (e.g., response to treatment and medication side effects profile may differ in women) by ensuring familiarity with updated, comprehensive, unbiased consensus statements that address gender differences (e.g., AHA’s guidelines for the prevention and treatment of heart disease in women).
- Encourage healthcare professionals to educate women and communities about the link between depression and heart disease.

Stroke-Specific Objective

Improve health outcomes from stroke through the education of healthcare professionals.

Within three years:

- Educate emergency medical technicians (EMTs) and paramedics to recognize stroke and use stroke scales in the field.

Model Programs: National Stroke Association’s “Stroke Rapid Response” is a train-the-trainer program used by EMS educators to train EMS professionals to accurately identify stroke patients.

The American Stroke Association’s “STROKE--Prehospital Care,” an EMT/paramedic training module, provides educational materials for EMT/paramedic educators.

- Educate emergency department staff, especially in rural hospitals, about diagnosis and treatment of stroke.

Model Program: Genentech’s “ACT for Stroke” teaches healthcare professionals how to recognize the critical signs and symptoms of acute stroke and how to implement life-saving treatment protocols.

Within five years:

- Prepare and distribute stroke prevention and treatment tool kits to practitioners who treat people with diabetes or people with pre-diabetes. Include information on: the link between type 2 diabetes and stroke, and the need to aggressively treat people who are newly diagnosed with diabetes since their stroke risk is especially high.

“Establishing programs that provide ongoing education for field EMS personnel to facilitate the accurate and rapid recognition of patients with acute stroke is essential...”

--Stroke 2005;36:694

POTENTIAL PARTNERS (See list of acronyms)

Heart Disease, Stroke, and Risk Factor Objective _____

Professional School Strategies

Public (State/Federal): Professional schools, CDPH

Private: Professional schools, nursing assistant and medical assistant training programs

Healthcare System Strategies

Public (State/Federal): CDPH, EMSA

Public (County/local): County health clinics, community clinics, LEMSAs

Nonprofit: AHA/ASA, NSA, CMA, ACOG, CPCA, AAFP, CAPA, CANP, ACN, ACP, SHM, EMDAC, EMSAAC, SAF, ACCME, WomenHeart, NHLBI, Kaiser Permanente National Diversity Council, HFSA, PBGH, NAHN, ISHIB

Clinical: Lumetra (Cultural Competence Initiative)

Private: Pharmaceutical companies, third-party payors

Heart Disease-Specific Objective _____

Public (State/Federal): COWH

Nonprofit: AHA, NHLBI, WomenHeart, HFSA

Clinical: CMA, AAFP

Stroke-Specific Objective _____

Public (State/Federal): EMSA, CDPH

Public (County/local): LEMSAs

Nonprofit: ASA, NSA, ADA, California NeuroAlliance, AAN, EMDAC, EMSAAC



Goal # 6

Recommendations for Legislation and Policy

Changes targeted to individuals can be effective in preventing heart disease, stroke, and related risk factors. However, this is only one component of an integrated approach to heart disease and stroke prevention and care across the State. Change must also occur on a larger scale. In order for this to take place, it is necessary to develop and implement policies that support systematic, environmental, and organizational change.

Recommendations for policy change include both public policies (e.g., legislation, regulations) and private organizational policies (e.g., policies for community organizations, schools, workplaces, and health care). Enacting public policies that foster heart health and reduce stroke risk will create an environment that supports the efforts of individuals to make healthy lifestyle changes. Enacting policy changes within organizations affects individuals even more directly and provides leadership and social support for healthy behavior change. Educating policymakers, in both the public and private sectors, is an important component in achieving improved heart disease and stroke outcomes in California.

This section describes strategies for educating policymakers, as well as specific policy measures that can be enacted in the community, schools, workplaces, and healthcare systems.

GOAL # 6:

Improve cardiovascular health and quality of life through legislation and policy development.

Baseline data: As of 2006, approximately 100 statewide policies and regulations on heart disease, stroke, and related risk factors (including high blood pressure and high cholesterol) were in existence, and approximately 50 organizational policies existed in worksites, health care, and local communities. (*Inventory of California Policies on Heart Disease, Stroke, and Related Risk Factors* available on the CHDSP web site)

Target: By 2010, evaluate regulations on heart disease and stroke, determine whether additional legislation is needed, and propose action to remedy the deficiencies.

“Enacting public policies that foster heart health and reduce stroke risk will create an environment that supports the efforts of individuals to make healthy lifestyle changes.”

*February is
National Heart
Month.*

*May is
National Stroke
Awareness
Month.*

Heart Disease, Stroke, and Related Risk Factor Objective

Create and support a heart disease, stroke, and related risk factor policy agenda that includes education of policy makers and public officials.

Strategies for COMMUNITIES

Within three years:

- Conduct a heart disease and stroke education campaign for elected officials, including:
 - A Legislative Briefing on heart disease in February (National Heart Month) every other year, alternating with a Legislative Briefing on stroke in May (Stroke Awareness Month).
 - Face-to-face meetings with legislative champions/health committee chairs/Governor's Health Deputy to highlight heart disease and stroke issues and the potential for policy action.
 - Distribution of heart disease and stroke information to legislative, city, and county offices.
 - Cholesterol/blood pressure/stroke risk screenings for legislative staff, city, and county offices.
 - Invitations to district events that build heart disease and stroke awareness.

Model Program: State and local officials are invited to the American Stroke Association's "Saving Strokes," an annual event that was started in Sacramento as a way to empower stroke victors by illustrating that disabilities need not stop them from playing or learning golf. Working in conjunction with the local PGA and holding these events on community golf courses has created new venues for stroke awareness among both the public and policymakers.

Within five years:

- Provide incentives and recognition for cities/communities to implement programs that impact heart disease and stroke, such as smart growth with walkable/bikeable paths, safe routes to school, and EMS response units equipped with 12-lead EKGs.

Model Program: The California Healthy Cities and Communities Program, implemented by the Center for Civic Partnerships, has engaged thousands of leaders in over 70 cities and communities to adopt policies and encourage behaviors that promote health. Examples include stringent local tobacco control ordinances and local land use policies that allow use of public and private land for community gardens.

- Establish “heart disease champions” and “stroke champions” in the membership of legislative offices and on local city and county boards.

Within ten years:

- Reduce financial disincentives for calling 911 for heart attack or stroke symptoms by promoting strategies including:
 - Assessing feasibility of property tax assessments as a payor for 911 services (similar to Mello-Roos districts for schools).
 - Assessing feasibility of life insurance, or other insurance policies, as payors for 911 services.
- Promote laws/policies requiring drug companies that conduct “direct-to-consumer” advertising for medications used to prevent or treat heart disease, stroke, and related risk factors to contribute to a fund that will support public service announcements and media campaigns about risk factor reduction strategies, the signs and symptoms of heart attack and stroke, and the importance of calling 911 immediately when symptoms develop.
- Explore a State income tax form check-off for heart disease and stroke research as a means of assuring adequate funding.

Strategies for SCHOOLS _____

Within ten years:

- Encourage policies that require schools to include life-saving education on heart disease and stroke in the K-12 curriculum. Begin integrating this education into lesson plans, starting in first grade. Teach the relationship between healthy eating/physical activity and healthy bodies versus poor nutrition/inactivity and heart disease risk. In middle and high schools, incorporate information on heart attack and stroke (including recognition and response) into existing/proposed health education curriculum. Teach children/adolescents to call 911 if an adult or peer develops signs and symptoms of heart attack or stroke. Require CPR classes and instruction in the use of AEDs.
- Encourage policies that increase the number of schools with on-site nurses in order to increase time allocations for risk-factor screening, treatment and follow-up, and education for children about heart health and stroke.

Strategies for WORKPLACES

Within three years:

- Develop and maintain an inventory of regulations and policies at the State and local government levels, as well as in the workplace, relating to heart disease, stroke, and related risk factor prevention and treatment.

Within five years:

- Develop and promote statewide award programs and other incentives for workplaces that encourage preventive health behaviors to reduce the risk of heart disease and stroke, including:
 - Healthy food service policies that emphasize calorie, fat, and portion size control.
 - Policies that promote physical activity (e.g., walking breaks, subsidies/reduced rates for health club memberships).
 - High blood pressure and cholesterol screenings.
 - Workshops with health educators, dietitians, and exercise physiologists.
 - Worker rewards for reduced absenteeism.
 - Time off for cardiac rehabilitation programs.
 - Smoking cessation support.
 - On-site opportunities and incentives to learn CPR and use of AEDs.
 - Use of public transportation as a means of increasing physical activity and improving air quality.
- Explore incentives, such as tax credits, to small businesses that offer low- or no-cost blood pressure and cholesterol screening tests, particularly for under/uninsured employees.
- Amend the building code to require the placement of AEDs in public facilities (based on facility size, i.e., square footage).

Strategies for HEALTHCARE SYSTEMS

Within three years:

- Support legislative resolutions that promote the establishment of statewide systems of care for heart attack and stroke care.
- Require all certified cardiac and stroke centers to conduct community education on heart disease, stroke, and related risk factors.

- Promote recognition programs for hospitals that improve quality of care measures relating to heart disease, heart failure, and stroke [e.g., Centers for Medicare and Medicaid Services (CMS) measures].
- Assure that community benefits legislation (laws that require not-for-profit medical care organizations to provide free services for their community in exchange for favored tax treatment) accepts community heart disease and stroke education as a qualifying activity.
- Promote policies that develop and sustain cultural competence among healthcare providers.
- Explore feasibility of a statewide strategy to purchase and disseminate blood pressure and cholesterol-lowering medications.

Within ten years:

- Broaden the Health Plan Employer Data and Information Set (HEDIS) to include performance measures for:
 - Heart disease and stroke risk factor management, including:
 - ✓ Cholesterol screening and management.
 - Heart disease treatment, including:
 - ✓ Congestive heart failure management.
 - ✓ Use of aspirin, and other preventive medications, in patients with cardiovascular conditions.
 - ✓ Written protocols for heart attack treatment.
 - Stroke treatment, including:
 - ✓ Multidisciplinary dedicated stroke service.
 - ✓ Evaluation of acute stroke patients for treatment with thrombolytics (clot-dissolving agents).
 - ✓ Appropriate use of anticoagulants for patients with atrial fibrillation.
 - ✓ Written protocols for stroke treatment.
- Consider policies that require medical education for maintenance of Specialty Board certification or licensure of healthcare providers on:
 - Heart disease and stroke prevention and evidence-based treatment guidelines.
 - Health literacy (i.e., barriers for persons with limited English proficiency or with low literacy), including barriers as they relate to heart disease, stroke, and related risk factors, as well as the use of educational tools available for patients who are not able to understand basic health information and services.

In March 2006, CMS began providing coverage for comprehensive cardiac rehabilitation programs.

--Medicare National Coverage Determinations Manual

- Encourage policies that require certified nursing assistants to demonstrate the ability to recognize heart attack, acute stroke, TIA, and heart failure decompensation as a requirement for certification by CDPH Licensing and Certification.
- Provide incentives for providers whose patients meet and maintain blood pressure and cholesterol goal targets, as set by evidence-based guidelines (e.g., “Pay for Performance”).
- Provide incentives for patients (e.g., health insurance premium reductions or discounts) who meet and maintain blood pressure and cholesterol goal levels, as set by evidence-based guidelines.
- Advocate for electronic medical records (EMR) in all California hospitals and a system for statewide EMR accessibility by health systems and providers to reduce medical errors and improve case management.
 - Identify potential resources for hospitals that are having difficulty implementing EMR systems.
 - Establish standards for the use and sharing of electronic medical records to maximize accuracy and efficiency while protecting privacy and confidentiality.
 - Ensure patient privacy.
- Promote risk reduction programs for people with high-risk profiles (diabetes, obesity, high blood pressure, and high cholesterol) and for individuals with known cardiovascular disease, including exercise/physical activity for people with congestive heart failure.
- Evaluate Medi-Cal policy changes to encourage quality care for heart disease, stroke, and related risk factors, such as “Pay for Performance” or added reimbursements for care in a certified heart attack or stroke center.

Stroke-Specific Objectives

Develop policies to improve stroke treatment and management.

Within five years:

- Introduce/support policies that enable telemedicine consultations between physicians at different hospitals.
 - Address liability concerns that arise when a consulting physician does not have formal privileges at the hospital which houses the patient.
 - Address reimbursement concerns

Within ten years:

- Advocate for long-term stroke rehabilitation services (extending beyond six months), including speech therapy, physical therapy and strength and balance training, to prevent and reduce disability.

POTENTIAL PARTNERS (See list of acronyms)

Heart Disease, Stroke, and Risk Factors Objective

Community Strategies

Public (State/Federal): CDPH

Public (County/local): Health departments

Nonprofit: AHA/ASA (including You're the Cure), NSA, SAF, PSA, Stroke Association of Southern California, League of California Cities, AARP, California Healthy Cities and Communities, CABWHP

Clinical: Healthcare systems

Private: Pharmaceutical companies, media, life insurance companies

School Strategies

Public (State/Federal): Governor's Office, CDE, CDPH, SHC

Nonprofit: AHA/ASA, PTAs, school site councils

Clinical: AAP, AAFP

Workplace Strategies

Public (State/Federal): CDPH, Division of State Architect

Nonprofit: California State Chamber of Commerce, AHA/ASA, unions, BOMA International, PBGH

Healthcare System Strategies

Public (State/Federal): UC and state colleges, CMS, Senate/Assembly Health Committee Chair and Vice Chair, Medical Board of California

Nonprofit: AHA/ASA, health literacy advocacy groups, AMA, medical and nursing associations, HFSA, AARP, SAF, PSA, Stroke Association of Southern California, Stroke Education Council of Marin, The Leapfrog Group

Clinical: Managed care organizations, CMAC, AMA, ACN, associations of internists, AAFP, Lumetra

Private: Third-party payors, Solucient

Stroke-Specific Objective

Public (State/Federal): CDPH

Nonprofit: ASA, NSA, ACN, SAF, PSA, Stroke Association of Southern California, CABWHP

Clinical: Healthcare systems, Stroke Recovery Center (Palm Springs)



Recommendations for Priority Populations

Eliminating cardiovascular health disparities among all Californians, including recent immigrants, has been given high priority in the Master Plan. However, identifying priority populations in a state as large and diverse as California is complex. Consideration must be given to race/ethnicity, gender, age, socioeconomic status, prior history of heart disease and stroke, and geographical location. California has a land mass of approximately 175,000 square miles, of which 80 percent is rural; however, 70 percent of all Californians live in nine of the 58 counties (Los Angeles, Orange, San Diego, San Bernardino, Riverside, Santa Clara, Alameda, Sacramento, and Contra Costa). In the last U.S. Census (2000), 11 percent of the California population was over age 65 years, and five percent was over age 75 years; nonwhite women accounted for 26 percent of the State's population; there were 19 racial/ethnic groups living in the State; and a language other than English was spoken in approximately 40 percent of households. In 2003, more than 13 percent of Californians lived below the federal poverty threshold. All of these factors must be considered in identifying priority populations.

Current surveillance measures and research studies indicate that some populations bear a disproportionate share of the burden of heart disease, stroke, and related risk factors. To improve health in high-risk populations, special emphasis should be placed on the following:

- Education and awareness.
- Prevention and risk assessment.
- Translation and dissemination of culturally appropriate information and educational materials.
- Access to healthcare.
- Cultural competence of healthcare providers.
- Inclusion of priority populations in research studies.
- Reporting of research findings in a priority population-specific manner.

“Current surveillance measures and research studies indicate that some populations bear a disproportionate share of the burden of heart disease, stroke, and related risk factors.”

GOAL # 7:

Eliminate cardiovascular health disparities.

Baseline data: See *Profile of Heart Disease and Stroke in California*

Target 1: By 2010, decrease the prevalence of high blood pressure to 16 percent and decrease the prevalence of high cholesterol to 17 percent among all racial/ethnic and gender groups. (HP 2010 Goal)

Target 2: By 2010 decrease heart disease mortality and hospitalization rates by 20 percent among all racial/ethnic and gender groups. (HP 2010 Goal)

Target 3: By 2010, decrease stroke mortality and hospitalization rates by 20 percent among all racial/ethnic and gender groups. (HP 2010 Goal)

Target 4: By 2010, decrease heart failure mortality and hospitalization rates by 20 percent among all racial/ethnic and gender groups. (HP 2010 Goal)

Heart Disease, Stroke, and Related Risk Factor Objective

Eliminate racial/ethnic and gender disparities in heart disease, stroke, and related risk factors, including the prevalence of high blood pressure and elevated cholesterol.

Strategies for COMMUNITIES

Within three years:

- Identify local leaders and community groups that are currently addressing community/family issues (e.g., violence, transportation, housing, elders, schools), and develop partnerships to explore strategies that:
 - Reflect local issues.
 - Promote knowledge of heart disease, stroke, and related risk factors to these leaders and groups in order to craft interventions that resonate with local concerns.
 - Encourage all communities to develop partnerships.

- Implement heart disease, stroke, and related risk factor educational programs targeted for specific racial/ethnic groups.

Within five years:

- Determine cultural definitions of illness/wellness, health-seeking behaviors, treatment, and outcome expectations, and use findings to inform interventions.

Model Programs: San Bernardino African-American Health Initiative addresses the health disparities of African Americans through an active collaboration with representatives from over 30 community organizations.

- Support community-based assessments of health barriers and access issues (e.g., transportation, location of medical providers).
- Support efforts of community groups and networks from priority populations to assess needs. Design and support services to educate constituents about heart disease, stroke, and related risk factors.
- Outreach to local experts and leaders in churches, senior centers, Head Start programs, schools, and community-based organizations to identify local trainers/teachers and potential training/educational sites. Train community peer educators about prevention and management of heart disease, stroke, and related risk factors, and the importance of taking medications prescribed by health professionals.
- Develop community-based “health report cards” to monitor local heart disease, stroke, and related risk factor interventions, including strategies to improve health disparities.

Model Program: Community Health Report Cards are one method of reporting and tracking community health profiles, needs assessments, and quality of life indices for public health agencies and their community partners.

- Empower members of high-risk priority populations, and the organizations that represent these populations, to hold conferences to share educational materials, tools, successful peer education models, and strategies to prevent and manage heart disease, stroke, and related risk factors in high-risk communities.

Within ten years:

- Develop or identify educational materials that are sensitive to “health literacy” issues and present materials in a manner that is accessible to the community. Examples include:
 - Public service announcements on cable channels, public access channels, radio and print media that offer programming in languages other than English (e.g., Univision).
 - Spokespersons/leaders within culturally diverse communities.
 - Innovative methods of delivering content.

Strategies for SCHOOLS

Within three years:

- Encourage high school students who are satisfying “community service” requirements to undertake heart disease and stroke prevention education for priority populations.

Within ten years:

- Establish college credit for the training of peer educators.
- Develop or identify and utilize “service learning” courses/curricula within colleges and university health professional programs (including pre-professional programs), social work programs, and child/family development programs to conduct local health assessments, provide community education, and develop health campaigns that resonate with local concerns and attend to cultural context.

Strategies for WORKPLACES

Within five years:

- Provide incentives for businesses located in high-risk, low-income areas to offer heart-healthy and stroke-free lifestyle support to their workers (e.g., gym memberships, designated walking areas around work site, smoking cessation programs, free on-site blood pressure and cholesterol checks).

Strategies for HEALTHCARE SYSTEMS

Within three years:

- Encourage healthcare providers to improve their cultural competence, particularly as it applies to heart disease, stroke/TIA, and related risk factors; use incentives, such as CME units, discounted licensing fees, etc.

Model Programs: Lumetra, California's federally-designated Quality Improvement Organization (QIO), has a Cultural Competency Initiative that offers physicians no-cost tools and resources, including a self-paced online course called "A Physician's guide to Culturally Competent Care."

Kaiser Permanente has developed handbooks for providers that describe population characteristics, health beliefs, risk factors, and specific health needs of Hispanics, African Americans and Asian Americans.

- Increase the number of WISEWOMAN-like programs, so that all uninsured/underinsured women at high risk for cardiovascular disease are provided screening tests and intervention for high blood pressure and high cholesterol.

Model Program: WISEWOMAN is a CDC-funded lifestyle modification program to reduce heart disease and stroke risk by improving dietary and physical activity behaviors in uninsured or underinsured women, age 40-64 years.

- Increase awareness (particularly among primary care providers) of the risk of heart disease, heart failure, and stroke as leading causes of death in women. Include information on gender differences in symptoms, diagnosis, and treatment in women.

Model programs: AHA's "Go Red for Women" campaign links the color red and the red dress with the ability all women have to improve their heart health and live stronger, longer lives.

The National Heart, Lung, and Blood Institute's "Heart Truth Campaign" also associates the color red with a woman's power to achieve better heart health. The Campaign includes a toolkit for public health professionals.

Within five years:

- Increase the understanding of key heart disease and stroke messages among priority populations through an organized distribution of translated health education materials and by providing these materials at no cost or low cost. Translation of materials should be consistent with the language profile and demographic distribution of the State and culturally appropriate.

Existing heart disease is diagnosed in only half of women who have a first heart attack.

*-- J Women's Health
2004;(10):1087-1100*

- Ensure that evidence-based guidelines on the use of heart disease, stroke, and related risk factor assessment and management for specific racial/ethnic groups and women are implemented.

Within ten years:

- Disseminate and encourage adequate funding for best-practices models for working with vulnerable and diverse high-risk populations.
- Improve translation services through:
 - o Adequate funding for translation services.
 - o Use of culturally appropriate translated materials.

Heart Disease-Specific Objective

Improve outcomes from heart disease among vulnerable, high-risk populations.

Within three years:

- Identify opportunities to educate underserved populations with heart failure, including those with early stages of disease, about appropriate lifestyle, prevention, and medical therapies.
- Disseminate and encourage utilization of clinical care pathways for heart failure.

Stroke-Specific Objective

Increase awareness of stroke risk among vulnerable populations.

Within five years:

- Increase awareness of stroke risk in African Americans, the population with the highest stroke death rate.

Model Programs: The American Stroke Association's "Power to End Stroke" is designed to heighten awareness about stroke in the African American community.

The National Stroke Association's "Hip Hop Stroke," targeted for African American school children, teaches stroke prevention, symptom recognition, and the importance of calling 911.

POTENTIAL PARTNERS (See list of acronyms)

Heart Disease, Stroke, and Risk Factors Objective _____

Community Strategies

Public (State/Federal): IHP, IHS, CRIHB, CDPH, REACH 2010, NHLBI's "Heart Truth" Campaign

Public (County/local): Health departments

Nonprofit: AHA/ASA; NSA; African American Health Initiative; Latino Coalition; La Raza; NHMA; Sister To Sister; HFSA; AHA "Go Red for Women" Campaign; The Links, Incorporated; NBNA; community health coalitions; faith-based organizations; CBHN; CABWHP

Schools Strategies

Public (County/local): School districts

Nonprofit: AHA/ASA, NSA, peer-education programs, universities and community colleges

Workplace Strategies

Nonprofit: AHA/ASA, chambers of commerce

Private: Third-party payors

Healthcare System Strategies

Public (State/Federal): CDPH, COMH, COWH, CRHPC, IHP, IHS, CRIHB, CHDSP, WomenHeart, UC Centers of Excellence in Women's Health, NHLBI "Heart Truth" Campaign

Nonprofit: AHA/ASA, NSA, Stanford Heart Network, Latino Health Advisory Council, NBNA, ABC, La Raza, NHMA, rural health associations, California Women Heart Centers, The Links Incorporated, ISHIB, NAHN

Heart Disease-Specific Objective _____

Public (State/Federal): CDPH

Public (County/local): Health departments, community clinics

Nonprofit: AHA/ASA, HFSA, ISHIB, NAHN, CABWHP

Stroke-Specific Objective _____

Public (State/Federal): CDPH, REACH 2010

Public (County/local): Health departments

Nonprofit: AHA/ASA; NSA; African American Health Initiative; The Links, Incorporated; NBNA; community health coalitions; faith-based organizations; ISHIB; NAHN; CABWHP



Goal # 8

Recommendations for Research

Existing knowledge provides a road map to selectively design and implement strategies to decrease the toll of heart disease, stroke, and related risk factors. However, by expanding our knowledge through further research that is clinical, translational (i.e. basic science to clinical trial and clinical trial to practice), and community-based, it will be possible to design new approaches to decrease the burden of heart disease, stroke, and related risk factors. Future research should be focused on improving existing strategies and exploring creative new methodologies, especially among priority populations in California. In order to do so, increased funding is required.

GOAL # 8:

Improve quantity and quality of research on heart disease, stroke, and related risk factors.

Baseline data: In 2005, CDPH tobacco and nutrition programs received approximately \$20 million for research on heart disease and stroke risk factors.

Target: By 2015, establish CDPH funding for heart disease, stroke, and related risk factor research in California.

Heart Disease, Stroke, and Related Risk Factor Objectives

Promote clinical, translational, and community-based research on the prevention, diagnosis, and treatment of heart disease, stroke, and related risk factors.

Within three years:

- As funds for heart disease, stroke and related risk factors become available to CDPH, establish a Research Oversight Committee to develop:
 - The granting process and to assure accountability.

“Future research should be focused on improving existing strategies and exploring creative new methodologies, especially among priority populations in California.”

Lack of studies on women limits usefulness of research on coronary heart disease.

*--AHRQ Publication
No. 03-E035*

- Policies that award funds to research areas that are otherwise under-funded, including clinical, translational/implementation, and community-based research to address topics such as treatment adherence, healthy lifestyles, implementation of quality care, and delivery of health care to and preventive strategies for priority racial/ethnic groups and women.
- Policies that require appropriate representation of women and racial/ethnic groups in the study populations and also require presentation and publication of data stratified for these study populations.
- Policies that require grantees to register in a statewide database.
- A mechanism that will allow matching funds for research projects.
- Encourage priority research topics, including:
 - Effective strategies to improve communications with specific racial/ethnic groups and women to enhance health promotion, disease prevention, and cultural competency.
 - Model peer-to-peer education programs and application of validated models in different settings.
 - Effective behavior modification and lifestyle interventions that are responsive to the State's changing demographics to reduce heart disease, stroke, and related risk factors.
 - Methods of increasing medication adherence for heart disease, stroke, and related risk factors, such as the effects of reducing co-pays, specialized packaging, and combination drug "super pills" for coexisting medical conditions.
 - Measurement of the cost of heart disease, stroke, and related risk factors in California, including the average number of days of lost productivity among workers due to these diseases. Encourage the use of these data as a means of providing incentives to companies and the workforce for cardiovascular health promotion.
 - Methods for adapting successful lifestyle change programs to community and clinical settings with fewer resources.
 - Correlation between psychosocial conditions or behaviors and risk factors for heart disease and stroke and the role of psychosocial conditions or behaviors in maintaining healthy lifestyles and increasing adherence to medication regimens.
 - Factors responsible for health risk behaviors (e.g., tobacco, unhealthy diets, physical inactivity) and barriers to changing these behaviors, including social and cultural differences, especially within high- risk racial/ethnic groups.

- Causes for delay in treatment and diagnosis of AMI and stroke, and barriers to implementation of evidence-based guidelines.
- Social, cognitive, and emotional factors that contribute to delay in calling 911, and interventions that will address these factors.
- Heart disease, stroke, and related risk factor quality improvement and burden measurements.
- Identification of best practices for delivering secondary prevention of heart attack and stroke in skilled nursing facilities.
- Improved understanding of racial/ethnic differences and gender differences in cardiovascular disease (ranging from epidemiology to outcomes).
- Promote an environment that encourages participation, especially by high-risk racial/ethnic groups and women, in clinical studies, and promote participation in these studies.
- Increase awareness and support for research on priority racial/ethnic groups (i.e. African American, Hispanic, American Indian/Alaska Native, and Asian/Pacific Islander) and women.

POTENTIAL PARTNERS (See list of acronyms)

Public (State/Federal): CDPH, COMH, COWH

Public (County/Local): Academic research institutions

Nonprofit: AHA/ASA, NSA

Clinical: Associations of physicians and nurses, health educators, patient advocacy organizations, psychiatrists and psychologists, internists, and family practitioner associations

Private: Pharmaceutical companies, third-party payors, marketing experts, health literacy experts, academic research institutions

Familiarity (with the signs and symptoms of heart attack and stroke) is not sufficient to motivate individuals to take action when symptoms occur. The scope of the message should be expanded to address the social, cognitive, and emotional factors that contribute to delay.

--Circ 2006;114:176



Goal # 9

Recommendations for Surveillance, Monitoring, and Evaluation

Enhancing the scientific capacity to define the burden of heart disease, stroke, and related risk factors is a priority for California. Surveillance and monitoring serve as a guide when creating public health programs and provide direction when allocating limited program funds. Accurate and timely data are vital in the assessment of the disease burden, as well as in the evaluation of programs and policies.

Enhanced scientific capacity activities will include: surveillance of cardiovascular disease trends; monitoring of health disparities, including race/ethnicity, gender, socioeconomic status, and geographic differences; program planning; and outcomes evaluation. However, existing data resources are not adequate and there is a need to increase the capacity to assess the burden of heart disease, stroke, and related risk factors in California. In order to do this, it is critical to expand upon existing data sources and establish new resources for data.

GOAL # 9

Expand data acquisition and surveillance of cardiovascular disease, including the evaluation of programs targeting heart disease, stroke, and related risk factors.

Baseline Data: Current existing statewide data resources:

- California Death Statistical Master Files
- California Patient Discharge Data Files
- California Hospital Discharge Report
- California Health Interview Survey (CHIS)
- Behavioral Risk Factor Survey (BRFS)
- California Women's Health Survey

Target: By 2015, increase the capacity to evaluate the statewide cardiovascular disease burden by:

- Adding surveillance/monitoring/evaluation staff to State and local programs.
- Identifying new data resources.
- Supporting the addition of modules and questions on statewide surveillance survey

“Accurate and timely data are vital in the assessment of the disease burden, as well as in the evaluation of programs and policies.”

Heart Disease, Stroke, and Related Risk Factors Objectives

- (1) *Increase the capacity to assess the prevalence of heart disease, stroke, and related risk factors and to monitor risk trends in California, including geographic regions and populations at greatest risk for cardiovascular disease.*
- (2) *Evaluate the effectiveness of programs and policies and integrate findings into recommendations for new programs.*

Within three years:

- Support the addition of modules to the annual California Behavioral Risk Factor Survey (BRFS), including:
 - Signs and symptoms of heart disease and stroke.
 - Cholesterol and blood pressure.
 - Heart failure.
- Support the continued inclusion of heart disease, stroke, and related risk factor questions on the California Health Interview Survey (CHIS).
- Support the inclusion of heart disease, stroke, and related risk factor questions on the California Women's Health Survey.
- Identify gaps in the current surveillance system and the resources needed to gain a comprehensive understanding of the burden of heart disease, stroke, and related risk factors; prioritize needs for addressing gaps.
- Develop an assessment of the financial burden of heart disease, stroke, and related risk factors, including years of productive life lost and loss of time from work.
- Support continued surveillance and reporting efforts of CDPH, including analysis of county data on:
 - Heart disease and stroke risk factor prevalence, including high blood pressure and cholesterol.
 - Heart disease and stroke morbidity and mortality.
 - Financial burden of heart disease, stroke, and their risk factors.
- Use surveillance data to identify high-risk priority populations for heart attack, heart failure, and ischemic and hemorrhagic stroke.
- Collaborate with external institutions and experts with experience in evaluation of heart disease, stroke, and related risk factor prevention and treatment programs, and promote their involvement with implementation of the Master Plan.

Within five years:

- Amend the Office of Statewide Health Planning and Development (OSHPD) Hospital Annual Utilization Data File report to include:
 - Hospitalizations for heart failure.
 - Treatment variables for stroke, including time from symptom onset to treatment.
 - Diagnosis variable for stroke (severity).
 - Secondary prevention variables for stroke (notation of atrial fibrillation as a diagnosis and anticoagulation/antiplatelet therapy for stroke).
- Collaborate with local public health agencies and State partners to improve data surveillance and monitoring, including the development of risk factor and disease burden reports for local areas.
- Develop an interactive web-based data reporting and query system, accessible to all Californians, to provide both standard and customized morbidity, mortality, and prevalence data on heart disease, stroke, and related risk factors, by county, age, gender, and racial/ethnic group, as appropriate.
- Determine the cost-benefit of developing statewide acute coronary syndrome and stroke registries, with de-identified information, to measure disease and improve quality of care.
- Conduct a pilot project to study the feasibility of an outpatient reporting system for heart disease and stroke, including cardiac and stroke rehabilitation.

Within ten years:

- Create a statewide database, or access existing databases, to monitor critical information regarding quality of pre-hospital emergency care for acute coronary syndrome and stroke, including time from symptom onset to time of calling 911 and time from symptom onset to hospital door. Utilize data for quality improvement, evaluation of plan strategies, and measures of success of public education programs.

POTENTIAL PARTNERS (See list of acronyms)

Public (State/Federal): CDPH, EMSA, OSHPD, CHIS

Public (County/local): Health departments, medical societies, LEMSAs

Nonprofit: AHA/ASA, NSA, EMSAAC, EMDAC

Clinical: Preventive cardiologists, preventive medicine specialists, healthcare outcomes researchers, epidemiologists, biostatisticians



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Assembly Bill No. 1220

CHAPTER 395

An act to add and repeal Section 104141 of the Health and Safety Code, relating to disease prevention.

[Approved by Governor September 16, 2003. Filed with Secretary of State September 17, 2003.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1220, Berg. Heart disease and stroke prevention.

Existing law requires the State Department of Health Services to administer various programs related to disease prevention and health promotion, including a program for the control of high blood pressure.

This bill would create the Heart Disease and Stroke Prevention and Treatment Task Force within the department. The task force would be composed of 12 members, as specified, and would be required to perform a number of duties, including the creation of a Heart Disease and Stroke Prevention and Treatment State Master Plan. This bill would require the task force, by November 1, 2005, to submit the master plan to the Legislature, the Governor, and the department. This bill would also make implementation of its provisions contingent upon the receipt of private funding in an amount sufficient to fund the entire cost of the operation of the task force and costs associated with completing the requirements imposed by this bill, as determined by the department. These provisions would become inoperative March 1, 2006, and would be repealed January 1, 2007.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares all of the following:

(a) Cardiovascular disease is the number one cause of death and disability nationally.

(b) Heart disease alone is the number one killer, and stroke is the number three killer, of Californians.

(c) More people die each year of cardiovascular disease than of the next five leading causes of death combined.

(d) This year the economic burden on the nation due to heart diseases and stroke is estimated to be over three hundred and fifty billion dollars (\$350,000,000,000).

(e) A heart disease and stroke prevention and treatment state master plan is needed to reduce the morbidity, mortality, and economic burden

of heart disease and stroke in the state. A master plan is a vital step toward enabling the state to draw down needed federal funds for future activities in this area.

SEC. 2. Section 104141 is added to the Health and Safety Code, to read:

104141. (a) The Heart Disease and Stroke Prevention and Treatment Task Force is hereby created in the department.

(b) The task force shall be comprised of 12 members, as follows, who have demonstrated interest in heart disease or stroke:

(1) Three members appointed by the Speaker of the Assembly, as follows:

(A) One member representing a volunteer health organization dedicated to research and prevention of heart disease and stroke.

(B) One practicing physician with expertise in research, prevention, or treatment of stroke victims.

(C) One hospital administrator.

(2) Three members appointed by the Senate Committee on Rules, as follows:

(A) One representative of a population disproportionately affected by heart disease and stroke.

(B) One practicing physician with expertise in research, prevention, or treatment of cardiovascular disease.

(C) One representative of a health care organization.

(3) Six members appointed by the Governor, as follows:

(A) One heart disease survivor.

(B) One stroke survivor.

(C) One registered nurse.

(D) One representative of a local health department.

(E) One member of a university facility with expertise in programs intended to reduce the rate of heart disease and stroke.

(F) One registered dietitian with experience in population based programs.

(c) (1) Members of the task force shall be appointed on or before March 1, 2004.

(2) Members shall serve without compensation, but shall be reimbursed for necessary travel expenses incurred in the performance of task force duties.

(3) On or before June 1, 2004, the task force shall meet and establish operating procedures.

(4) A majority of the task force shall constitute a quorum for the transaction of business.

(5) The task force shall be headed by a chairperson, selected by the task force from among its members.

(d) The duties of the task force shall include, but not be limited to, all of the following:

(1) Creating a comprehensive Heart Disease and Stroke Prevention and Treatment State Master Plan that contains recommendations to the Legislature, the Governor, and the department. The master plan shall address changes to existing law, regulations, programs, services, and policies for the purpose of improving heart disease and stroke prevention and treatment in the state.

(2) Synthesizing existing information on the incidence and causes of heart disease and stroke deaths and risk factors to establish a profile of these deaths and risk factors in the state for the purpose of developing the master plan.

(3) Publicizing the profile of heart disease and stroke deaths and persons at risk in the state, and methods of prevention of heart disease and strokes.

(4) Identifying priority strategies that are effective in preventing and controlling, and treating persons at risk of, heart disease and stroke.

(5) Receiving and considering reports, data, and testimony from individuals, local health departments, community-based organizations, voluntary health organizations, and other public and private organizations statewide in order to assess opportunities for collaboration, as well as to identify gaps in heart disease and stroke prevention and treatment in the state.

(e) On or before November 1, 2005, the task force shall submit its plan to the Legislature, the Governor, and the department. Prior to issuing the plan, the task force may issue recommendations, as it deems necessary. Once the plan is submitted, the task force may revise and update the plan as necessary due to medical advances or other relevant information.

(f) The department shall provide staff support to the task force, and may apply for, accept, and spend any grants and gifts from any source, public or private, to support the requirements of this section.

(g) Implementation of this section shall be contingent upon the receipt of private funding in an amount sufficient to fund the entire cost of the operation of the task force and costs associated with completing the requirements imposed by this section, as determined by the department.

(h) This section shall become inoperative on March 1, 2006, and, as of January 1, 2007, is repealed, unless a later enacted statute, that becomes operative on or before January 1, 2007, deletes or extends the dates on which it becomes inoperative and is repealed.

EXECUTIVE SUMMARY: HIGHLIGHTS FROM THE PUBLIC FORUMS

At each public forum, expert panelists and the public were asked to respond to five questions. The five questions were aimed at the five goal areas that CDC has designated as vital to the development of a State heart disease and stroke prevention and treatment plan.

QUESTION NUMBER 1: *What are the three most important changes in California that need to be made in order to reduce death and disability from heart disease and stroke?*

Panelists and community members identified seven broad categories regarding the changes that must occur to reduce death and disability from heart disease and stroke. These categories included: Prevention, Education, Research, Physical Activity, Healthcare Reform, Nutrition, and Environment. Highlights from the public forums include the following:

Prevention

- A public health approach, with input from communities and stakeholders, is needed to prevent the risk factors that lead to heart disease and stroke.
- Develop, value, and fund prevention strategies that include a healthy eating campaign, education about the importance of physical activity, and opportunities to continue and expand tobacco cessation efforts. The emphasis must be on disease prevention and lifestyle changes.
- Improve methods of educating healthcare professionals on new hypertension and lipid management guidelines.

Education

- Create a statewide, large-scale, public education campaign that focuses on cardiovascular disease as a leading killer, the major risk factors for heart disease and stroke, and risk-reduction strategies.
- Target education to high-risk populations, such as women and African Americans, who are at higher risk of hypertension, and Hispanics, who are at higher risk of diabetes.
- Improve education for children and young adults on the risks of tobacco, alcohol, and drug abuse, and the importance of diet and exercise.
- Increase the number of school nurses, so that they might participate in the teaching of health education classes.

Research

- Conduct research and evaluation to produce evidence-based strategies to learn what is most effective.
- Collect local data on heart disease and stroke (similar to cancer registry data).

Physical Activity

- Promote physical activity in the schools and the community.
- Develop after-school fitness programs for non-athletes and open schools for public use after school hours.
- Improve public access to areas such as sidewalks or bike paths and ensure public safety.

Healthcare Reform

- Expand the Healthy Families Program to include adults and emphasize primary care and prevention services.
- Mobilize all members of the healthcare system, including dentistry, optometry, ophthalmology, primary care, gynecology, to actively screen for risk factors for stroke and heart disease.
- Develop a regional approach to managing stroke and heart disease, directing patients to high-volume centers with excellent outcomes and low complication rates.
- Fully integrate the emergency medical response (EMS) efforts into prevention activities and health management of communities.
- Offer tax breaks and other legislative incentives for healthful activities at workplaces (e.g., sports teams, healthful cafeteria menus, and exercise programs).

Nutrition

- Promote access to healthful foods, including fresh fruits and vegetables, in communities and in schools.
- Develop standardized food serving sizes.
- Support local efforts to improve access to quality nutritious foods, including farmer's markets and community garden projects.

Environment

- Encourage cities to line their streets with trees for their beauty and improved air quality.
- Encourage "Smart Growth" (the development of mixed-use neighborhoods that provide services, shopping, and other destinations within walking or bicycling distance of homes).

QUESTION NUMBER 2: *What do people in California need to learn about heart disease and stroke? What do physicians and other healthcare professionals need to learn about heart disease and stroke?*

Panelists and community members identified the following topics regarding heart disease and stroke education. One recurring theme across the State was the need for improved education on the signs and symptoms of heart disease and stroke. Other topics that were discussed included:

Californians

- Cardiovascular disease is the leading cause of death in men AND women, and it is a preventable disease.
- Regular screenings for lipid levels and blood pressure are an important component of healthcare.
- Provide education about starting medical treatment within the first 60 minutes after a heart attack or stroke, e.g., the "Golden Hour."
- Parents' actions affect their children; the prevention of risk factors, including instilling good eating habits and adequate physical activity, starts in childhood (not once a disease is diagnosed).

Healthcare Professionals

- Collaboration must take place between different sectors (planning and development, business, etc.) to promote better community health, especially if we are to attain the Healthy People 2010 Objectives.

Appendix B

- Create and support data registries and include information on populations, outcomes, and risk factors in different communities.
- During routine clinical visits, integrate patient education on risk factor reduction, including diet, exercise, and smoking cessation.

QUESTION NUMBER 3: *What needs to happen in California schools, workplaces, and communities to prevent heart disease and stroke?*

The responses from panelists and community members regarding changes in schools, workplaces, and communities, centered on improved nutrition and increased physical activity. The highlights from question 3 are as follows:

Schools

- Teach physical education and activity in all schools; give weight to their true value by having specific standards, adequate funding, and adequate time allocated during the school day for these activities.
- Enlist school boards to ensure that only nutritious foods are available in their schools and that physical education and health are part of the curriculum.
- Adequately fund schools so that they are not supporting themselves with revenues from unhealthy food and drink sources.
- Incorporate school gardens into the general curriculum, in conjunction with classes on healthy food preparation.
- Mandate that smaller schools, in close proximity to residential areas (not on edges of communities), be built so that walking to schools is a realistic option.

Workplaces

- Provide wellness programs and informational classes in the workplace, along with an environment that is conducive to supporting physical activity (e.g., walking tracks around buildings, walking clubs, safe and inviting stairwells, showers, lockers, and childcare).
- Educate employers about the financial benefits of supporting wellness programs in the workplace.
- Make fruits, vegetables, and other healthy foods available in vending machines and in cafeterias.
- Create incentives for physical activity (such as health club discounts) and healthful eating.
- Promote flex-time options that allow time for fitness activities in the daily schedule.

Communities

- Develop and maintain a pedestrian-friendly, safe environment for cycling, skating, and walking.
- Ensure that supermarkets and farmers markets sell fresh fruit and vegetables in low-income communities.
- Increase access to cardiovascular resuscitation (CPR) training and defibrillators.
- Make educational materials in multiple languages available in various community locations such as the DMV, community centers, health clinics, etc.
- Create regional approaches to cardiovascular disease prevention and treatment and have community leaders form partnerships with public health professionals.
- Encourage health professionals to sit on land use planning boards. (Only one percent of planning boards across the nation have healthcare professionals sitting on them.)

QUESTION NUMBER 4: *What needs to change in the healthcare setting to improve a) prevention of heart disease and stroke, and b) quality of treatment delivered to patients with heart disease or stroke?*

Panelists and community members were emphatic about the need for increased education to prevent heart disease and stroke. Improvements in quality of care focused on regional approaches for treatment of acute heart disease and stroke events. Question 4 highlights are as follows:

Prevention

- Healthcare professionals need to work across sectors with community planners to increase the importance of designing healthy communities.
- Profile all patients' cardiovascular disease risk, regardless of their reason for seeing a provider.
- Establish and support reimbursement for prevention services.
- Provide educational handouts for patients, along with cardiovascular report cards.
- Make risk factor management classes available for healthcare professionals.

Quality of Treatment

- Implement treatment guidelines for diabetes, hypertension, and high cholesterol.
- Develop population registries, with built-in tracking and modeling based on evidence-based guidelines. Minimize the hospital/practitioner data collection burden to limit duplicate reporting to regulatory agencies.
- Implement a team approach for clinics treating heart disease and stroke follow-up, utilizing the expertise of dietitians, health educators, and nurses.
- Create incentive programs to better manage health outcomes.
- Identify best resources for emergency medical services dealing with heart attack and/or stroke victims.

QUESTION NUMBER 5: *How can we reduce health disparities in heart disease and stroke?*

Representatives from underserved populations were present at each of the seven public forums. These individuals provided a first-hand account of the changes needed to achieve the goal of reducing the burden of heart disease and stroke in their communities. Highlights from question 5 included:

- Provide cultural competency training in treating and interacting with a variety of populations including people with developmental disabilities.
- Educate in a culturally specific manner about the importance of stroke and heart disease prevention as a part of school curricula and local community events, and through community organizations.
- Ensure that those involved in developing healthcare strategies are from diverse communities. The input from a diverse group of community members (ethnic groups, women, elderly, etc.) is critical.
- Look at factors that support people in engaging in healthy behaviors and address these from a population-specific standpoint: housing, jobs, jobs with health insurance, pedestrian-friendly communities, and access to healthy foods.

Appendix B

- Educate the community on standards of care, patient rights, and questions to ask of their providers.
- Increase the opportunities to involve people from different populations in clinical trials.
- Develop educational materials that are culturally, language- and reading-level appropriate.

CONCLUSION

The public forums were held for the primary purpose of providing the Heart Disease and Stroke Prevention and Treatment Task Force with input from various regional stakeholders on heart disease and stroke in California. This public forum report, a compilation of the public forum input, will be one of the important reports presented to the newly convened Task Force. The public forums were a means to publicize the seriousness of heart disease and stroke in California. This report does not attempt to present a consensus statement; rather this report reflects the voices of the people of California.

**Heart Disease Mortality -- Age-Adjusted Rates per 100,000 Population
(ICD-10 Codes I11, I20- I25)**

<i>Age Adjusted Mortality Rates per 100,000 population</i>					
<i>Diseases of the Heart - All Races, Both Genders</i>					
County	Year				
	2000	2001	2002	2003	2004
ALAMEDA	182.4	166.4	156.4	150.3	144.4
ALPINE	104.3	0.0	171.3	154.1	56.4
AMADOR	163.0	175.0	152.5	157.5	145.8
BUTTE	137.7	160.8	159.1	145.8	146.7
CALAVERAS	143.4	131.1	157.4	161.2	132.8
COLUSA	128.0	166.5	130.0	159.5	104.4
CONTRA COSTA	164.3	167.1	153.8	138.3	119.6
DEL NORTE	128.1	117.7	121.6	129.2	121.5
EL DORADO	135.0	146.6	144.7	136.6	142.5
FRESNO	194.7	196.1	182.7	180.0	159.9
GLENN	139.3	118.4	140.4	118.9	132.3
HUMBOLDT	142.5	167.5	145.3	150.1	159.6
IMPERIAL	159.8	127.5	156.2	159.7	128.0
INYO	169.2	171.8	187.7	204.7	178.0
KERN	222.7	220.9	233.0	213.3	191.8
KINGS	208.0	169.0	174.0	170.5	148.0
LAKE	209.5	159.2	126.4	193.0	165.9
LASSEN	129.5	140.2	168.3	106.6	158.4
LOS ANGELES	222.8	216.2	205.7	174.0	164.5
MADERA	182.9	188.7	181.3	166.3	147.3
MARIN	148.0	160.2	135.8	116.3	103.9
MARIPOSA	107.8	146.1	164.4	165.9	118.8
MENDOCINO	156.6	149.0	126.9	161.3	161.5
MERCED	180.4	198.3	198.9	208.8	177.9
MODOC	91.5	127.3	159.9	209.2	151.2
MONO	63.6	103.6	133.4	105.5	111.5
MONTEREY	152.4	146.4	152.4	133.7	115.6
NAPA	171.4	150.1	156.3	137.3	110.7
NEVADA	120.3	147.1	130.6	147.6	118.9
ORANGE	217.2	209.4	198.5	174.7	164.5
PLACER	179.3	180.2	184.3	140.0	134.5
PLUMAS	114.0	112.9	107.9	113.6	104.2
RIVERSIDE	214.6	212.3	206.3	202.8	189.7
SACRAMENTO	207.2	201.6	201.1	187.0	166.9
SAN BENITO	110.1	102.2	113.5	128.1	125.9
SAN BERNARDINO	244.3	232.8	235.0	235.5	209.9
SAN DIEGO	178.4	171.1	156.8	156.5	147.9
SAN FRANCISCO	151.5	148.4	142.4	147.0	131.6
SAN JOAQUIN	190.2	191.2	188.6	228.5	226.4
SAN LUIS OBISPO	146.8	140.6	129.9	127.5	130.4
SAN MATEO	126.3	127.4	121.4	125.0	116.2
SANTA BARBARA	161.2	153.6	153.1	149.5	144.2
SANTA CLARA	164.6	152.4	137.4	123.7	116.1
SANTA CRUZ	146.3	128.3	122.3	154.5	129.6
SHASTA	168.5	176.1	168.4	138.5	121.5
SIERRA	89.2	103.3	38.8	171.6	67.2
SISKIYOU	147.8	148.9	169.3	133.8	114.3
SOLANO	187.1	178.4	169.2	131.5	104.7
SONOMA	164.6	141.7	148.1	137.3	120.5
STANISLAUS	241.7	233.6	239.1	231.9	193.2
SUTTER	194.8	185.5	171.0	211.6	171.4
TEHAMA	159.0	165.2	151.6	130.3	126.0
TRINITY	177.5	101.8	121.8	60.1	87.8
TULARE	173.9	182.4	163.9	188.9	206.3
TUOLUMNE	183.0	156.0	160.0	143.0	141.2
VENTURA	166.1	162.5	160.8	155.0	142.0
YOLO	135.6	165.2	142.9	135.6	130.9
YUBA	240.8	211.5	197.1	222.7	182.8
CALIFORNIA	192.6	187.2	179.2	167.3	155.2

Notes:
 Statistically unreliable rates are in italics.
 Rates are age-adjusted to the US Standard Million population.
 Data sources: 2000-2004 Death Statistical Master Files and Department of Finance Population Files.

**Heart Disease Hospitalizations -- Age-Adjusted Rates per 1,000 Population
(ICD-9 Codes 402, 410-414, 429.2)**

<i>Age Adjusted Discharge Rates per 1,000 population</i>					
<i>Diseases of the Heart - All Races, Both Genders</i>					
County	Year				
	2000	2001	2002	2003	2004
ALAMEDA	18.7	17.8	18.0	17.6	19.0
ALPINE	3.4	8.3	5.7	4.0	5.2
AMADOR	22.8	23.1	21.3	22.8	23.5
BUTTE	17.7	17.9	17.0	16.7	19.1
CALAVERAS	14.8	17.3	16.4	15.7	16.8
COLUSA	18.1	15.4	12.9	12.4	17.8
CONTRA COSTA	16.8	16.2	16.9	16.3	17.0
DEL NORTE	10.0	10.4	10.0	12.0	19.1
EL DORADO	15.9	16.1	14.9	14.0	17.2
FRESNO	17.0	18.2	18.6	18.6	20.3
GLENN	12.9	13.1	11.8	13.1	11.4
HUMBOLDT	14.0	14.3	14.4	13.0	12.3
IMPERIAL	19.2	20.8	21.3	21.4	22.3
INYO	9.6	9.3	9.5	9.2	7.4
KERN	20.3	19.7	19.1	18.9	18.2
KINGS	17.8	17.4	13.8	15.5	17.6
LAKE	26.0	24.1	22.9	24.7	27.2
LASSEN	7.4	7.9	9.5	7.1	8.5
LOS ANGELES	20.5	20.9	20.5	20.4	18.4
MADERA	16.5	16.2	15.9	15.4	19.4
MARIN	13.4	14.2	14.4	15.1	13.8
MARIPOSA	12.3	14.1	15.8	15.6	13.4
MENDOCINO	17.6	18.2	15.4	16.7	16.7
MERCED	18.5	18.5	17.6	17.6	17.9
MODOC	5.7	8.1	11.5	9.8	9.5
MONO	2.6	2.4	3.2	3.1	3.4
MONTEREY	18.7	18.9	18.4	17.3	16.6
NAPA	21.1	20.5	20.9	21.0	21.6
NEVADA	14.5	14.0	12.5	12.7	15.1
ORANGE	18.7	18.7	18.1	17.8	16.8
PLACER	17.1	16.9	16.8	17.1	13.7
PLUMAS	12.4	10.8	11.7	11.5	10.8
RIVERSIDE	19.1	18.7	18.7	18.9	18.6
SACRAMENTO	17.1	15.9	15.7	16.0	14.9
SAN BENITO	15.9	14.5	15.7	16.2	18.5
SAN BERNARDINO	21.8	21.8	21.4	21.2	20.6
SAN DIEGO	16.6	16.5	16.5	16.3	16.0
SAN FRANCISCO	13.6	13.5	13.9	13.9	15.3
SAN JOAQUIN	19.9	19.7	19.5	19.9	21.1
SAN LUIS OBISPO	12.7	12.1	11.7	10.3	10.3
SAN MATEO	13.5	13.0	13.2	13.6	14.9
SANTA BARBARA	13.9	14.3	13.2	12.6	11.6
SANTA CLARA	15.2	15.6	15.1	14.7	15.0
SANTA CRUZ	15.1	14.2	14.4	15.0	15.8
SHASTA	25.1	25.4	24.6	20.7	17.9
SIERRA	7.7	7.3	8.9	13.9	9.8
SISKIYOU	14.6	14.8	15.7	13.6	10.8
SOLANO	19.5	19.4	19.2	19.6	18.8
SONOMA	14.2	15.0	15.0	14.6	14.6
STANISLAUS	21.1	20.6	19.8	19.1	20.2
SUTTER	24.0	23.2	23.9	22.0	23.2
TEHAMA	17.6	18.4	17.6	15.4	13.8
TRINITY	25.1	21.0	19.1	14.7	16.1
TULARE	21.3	21.4	22.5	21.8	24.6
TUOLUMNE	13.5	14.3	14.7	15.2	12.8
VENTURA	17.7	19.4	20.2	20.3	17.8
YOLO	14.5	15.1	14.9	14.6	13.5
YUBA	31.3	30.6	32.5	29.0	26.1
CALIFORNIA	18.2	18.2	18.0	17.8	17.4

Notes:
 Statistically unreliable rates are in italics.
 Rates are age-adjusted to the US Standard Million population.
 Data sources: 2000-2004 Death Statistical Master Files and Department of Finance Population Files.

**Stroke Mortality -- Age-Adjusted Rates per 100,000 Population
(ICD-10 Codes I60-I69)**

<i>Age Adjusted Mortality Rates per 100,000 population</i>					
<i>Stroke - All Races, Both Genders</i>					
County	Year				
	2000	2001	2002	2003	2004
ALAMEDA	69.6	65.4	57.4	63.4	51.6
ALPINE	0.0	0.0	0.0	286.2	175.9
AMADOR	44.6	71.1	39.8	72.6	55.1
BUTTE	64.7	49.9	54.0	61.3	55.4
CALAVERAS	42.0	54.6	49.2	61.1	55.8
COLUSA	47.3	24.7	16.2	48.5	70.1
CONTRA COSTA	75.1	65.6	62.2	57.1	56.4
DEL NORTE	34.6	46.3	34.1	28.0	48.1
EL DORADO	45.0	40.5	41.6	47.0	46.1
FRESNO	63.0	64.3	62.3	68.2	67.4
GLENN	65.2	54.0	28.5	54.3	28.7
HUMBOLDT	72.8	53.7	66.2	41.3	60.4
IMPERIAL	46.1	45.7	54.5	62.4	50.5
INYO	50.0	50.8	61.0	42.0	27.4
KERN	62.9	48.8	55.1	48.2	44.8
KINGS	61.8	69.5	38.8	58.4	52.5
LAKE	72.2	65.0	34.6	80.0	52.0
LASSEN	35.2	50.8	29.7	23.1	48.3
LOS ANGELES	58.1	54.9	52.7	45.2	44.5
MADERA	41.2	54.6	45.7	40.0	39.1
MARIN	70.2	71.6	61.6	44.2	44.8
MARIPOSA	38.3	45.4	35.9	70.4	29.1
MENDOCINO	62.0	73.2	60.9	60.4	60.4
MERCED	57.0	78.4	62.5	82.8	68.5
MODOC	51.2	61.1	41.9	67.0	55.9
MONO	41.9	35.1	44.1	16.4	28.1
MONTEREY	53.5	69.6	60.0	50.0	51.8
NAPA	78.5	73.1	72.0	63.2	58.1
NEVADA	59.5	65.8	55.6	76.1	68.3
ORANGE	65.8	62.1	64.4	57.0	55.0
PLACER	61.2	67.1	73.8	63.2	65.4
PLUMAS	27.0	45.7	35.1	36.2	61.3
RIVERSIDE	52.6	59.1	52.4	58.0	53.3
SACRAMENTO	71.1	72.6	75.4	63.4	61.9
SAN BENITO	57.8	35.0	49.2	55.1	35.0
SAN BERNARDINO	59.2	60.6	56.1	59.7	53.9
SAN DIEGO	61.5	60.9	53.4	56.8	52.3
SAN FRANCISCO	58.5	52.1	55.3	57.7	54.1
SAN JOAQUIN	67.8	73.0	66.7	72.3	63.0
SAN LUIS OBISPO	53.5	45.5	50.6	53.4	39.5
SAN MATEO	62.9	58.5	54.4	53.1	49.2
SANTA BARBARA	61.5	57.4	55.4	51.5	49.6
SANTA CLARA	59.0	56.9	53.3	46.9	43.2
SANTA CRUZ	48.4	49.1	39.5	50.2	53.0
SHASTA	47.1	62.1	62.8	43.9	40.4
SIERRA	31.2	0.0	37.1	47.5	0.0
SISKIYOU	53.8	51.9	59.4	50.9	43.5
SOLANO	80.3	74.5	81.2	52.4	44.9
SONOMA	70.9	66.8	61.0	62.1	60.2
STANISLAUS	63.1	63.6	55.8	53.7	47.3
SUTTER	86.2	47.2	49.0	67.4	58.8
TEHAMA	43.5	63.7	54.3	58.5	53.9
TRINITY	46.0	72.4	48.7	20.6	30.8
TULARE	64.1	63.5	60.2	64.0	55.6
TUOLUMNE	44.5	43.3	50.8	49.4	53.0
VENTURA	64.5	64.3	50.5	43.7	43.7
YOLO	73.0	56.1	63.6	68.5	56.4
YUBA	97.2	67.6	60.4	67.6	51.1
CALIFORNIA	61.2	59.4	56.3	53.3	50.3

Notes:
 Statistically unreliable rates are in italics.
 Rates are age-adjusted to the US Standard Million population.
 Data sources: 2000-2004 Death Statistical Master Files and Department of Finance Population Files.

**Stroke Hospitalizations -- Age-Adjusted Rates per 1,000 Population
(ICD-9 Codes 430-438)**

<i>Age Adjusted Discharge Rates per 1,000 population</i>					
<i>Stroke - All Races, Both Genders</i>					
County	Year				
	2000	2001	2002	2003	2004
ALAMEDA	7.7	7.1	7.1	6.9	7.3
ALPINE	2.7	2.5	0.0	1.0	0.0
AMADOR	7.9	7.6	6.2	6.4	5.2
BUTTE	6.4	5.9	5.4	5.8	6.4
CALAVERAS	4.8	4.6	4.8	4.7	4.9
COLUSA	4.4	3.5	4.0	3.5	5.8
CONTRA COSTA	6.7	5.9	6.0	5.6	6.0
DEL NORTE	3.9	3.2	3.3	3.8	6.0
EL DORADO	4.9	4.7	4.3	4.5	5.0
FRESNO	5.9	6.2	6.4	6.2	6.4
GLENN	6.1	5.8	5.9	5.3	5.6
HUMBOLDT	6.9	6.7	6.1	5.3	5.4
IMPERIAL	7.0	6.8	6.6	6.7	6.5
INYO	3.9	3.1	2.7	2.9	3.0
KERN	6.9	6.7	6.1	6.1	5.9
KINGS	6.2	5.8	5.1	5.3	4.9
LAKE	7.7	7.1	6.4	7.1	6.7
LASSEN	2.7	2.8	3.3	2.5	3.1
LOS ANGELES	8.3	8.1	7.8	7.6	6.6
MADERA	4.2	5.0	5.0	4.5	4.7
MARIN	5.3	6.0	6.0	6.0	5.2
MARIPOSA	3.8	4.2	6.3	5.5	4.5
MENDOCINO	6.5	5.8	5.9	5.7	6.5
MERCED	5.9	6.4	5.9	5.8	5.7
MODOC	3.3	3.4	2.5	3.8	3.7
MONO	0.6	1.4	1.0	0.7	0.6
MONTEREY	5.8	5.7	5.5	5.2	5.0
NAPA	6.4	6.5	6.9	6.1	6.4
NEVADA	6.0	5.6	5.1	5.3	5.6
ORANGE	7.2	7.1	6.6	6.5	5.8
PLACER	5.6	5.5	5.3	5.3	4.3
PLUMAS	4.0	3.8	4.1	3.3	3.6
RIVERSIDE	6.3	6.2	5.9	5.7	5.5
SACRAMENTO	6.4	5.9	5.8	5.9	5.5
SAN BENITO	4.6	4.5	5.8	5.5	6.0
SAN BERNARDINO	6.8	7.1	6.8	6.8	6.4
SAN DIEGO	6.1	6.0	5.6	5.5	5.3
SAN FRANCISCO	6.5	6.1	6.0	5.9	6.3
SAN JOAQUIN	6.0	6.0	6.0	6.2	6.4
SAN LUIS OBISPO	5.1	4.9	4.8	4.0	3.5
SAN MATEO	5.9	5.3	5.3	5.0	5.5
SANTA BARBARA	5.7	5.5	4.9	4.6	4.4
SANTA CLARA	5.8	5.6	5.3	5.1	5.0
SANTA CRUZ	5.0	5.1	4.8	5.0	5.1
SHASTA	7.8	6.8	6.4	5.6	5.0
SIERRA	3.5	4.2	5.1	6.7	2.9
SISKIYOU	4.2	4.7	4.1	3.7	3.8
SOLANO	7.3	7.6	7.2	7.0	5.7
SONOMA	5.6	5.9	5.6	5.2	4.9
STANISLAUS	6.5	6.0	6.1	6.0	6.0
SUTTER	7.3	6.6	6.1	5.9	5.7
TEHAMA	5.7	5.9	5.5	5.6	4.6
TRINITY	9.0	6.0	6.6	5.4	4.6
TULARE	7.2	6.8	6.7	5.7	7.2
TUOLUMNE	5.4	5.3	5.4	5.3	4.6
VENTURA	6.6	7.0	6.9	6.5	5.8
YOLO	5.4	4.9	5.1	5.1	4.7
YUBA	7.9	7.8	8.6	6.7	6.5
CALIFORNIA	6.8	6.7	6.4	6.2	5.9

Notes:
 Statistically unreliable rates are in italics.
 Rates are age-adjusted to the US Standard Million population.
 Data sources: 2000-2004 Death Statistical Master Files and Department of Finance Population Files.

Heart Failure Mortality -- Age-Adjusted Rates per 100,000 Population (ICD-10 Code I50)

<i>Age Adjusted Mortality Rates per 100,000 population</i>					
<i>Heart Failure - All Races, Both Genders</i>					
County	Year				
	2000	2001	2002	2003	2004
ALAMEDA	10.2	10.4	8.5	11.2	10.2
ALPINE	0.0	0.0	<i>81.6</i>	0.0	0.0
AMADOR	16.5	28.4	6.7	15.5	20.5
BUTTE	15.7	15.9	13.9	15.5	17.5
CALAVERAS	12.1	9.3	14.0	6.5	25.7
COLUSA	4.2	9.5	4.7	16.1	5.0
CONTRA COSTA	8.6	9.6	12.5	11.8	9.0
DEL NORTE	21.2	28.8	20.6	31.0	18.6
EL DORADO	11.7	22.0	25.1	14.7	23.0
FRESNO	17.3	14.4	18.8	24.9	21.9
GLENN	33.4	8.7	22.2	29.5	37.7
HUMBOLDT	28.0	25.0	21.4	22.2	25.5
IMPERIAL	6.9	6.4	6.8	15.8	7.8
INYO	7.8	3.2	18.8	3.8	5.2
KERN	10.2	15.1	10.7	15.9	16.1
KINGS	25.9	14.7	24.8	39.9	28.6
LAKE	14.8	16.1	12.5	20.1	22.3
LASSEN	25.8	9.0	5.7	10.1	10.5
LOS ANGELES	9.0	9.6	9.5	8.8	8.7
MADERA	13.5	8.9	10.1	7.3	8.4
MARIN	11.7	13.5	8.6	8.8	9.8
MARIPOSA	7.5	10.8	17.3	13.4	21.7
MENDOCINO	6.9	15.3	22.8	25.8	23.3
MERCED	4.6	7.6	10.9	10.6	7.6
MODOC	22.2	20.7	29.7	14.5	49.2
MONO	0.0	0.0	0.0	28.0	12.7
MONTEREY	8.9	10.6	6.8	14.0	8.8
NAPA	9.0	7.8	12.8	13.4	15.7
NEVADA	7.0	10.1	12.8	18.5	14.3
ORANGE	9.3	10.2	11.4	12.6	12.6
PLACER	14.9	11.7	17.6	14.6	16.9
PLUMAS	22.7	23.8	2.7	21.3	11.7
RIVERSIDE	8.7	10.2	10.9	11.9	10.8
SACRAMENTO	13.6	12.1	12.3	13.0	12.6
SAN BENITO	16.1	6.6	6.7	11.2	14.0
SAN BERNARDINO	11.3	13.4	13.2	14.3	17.7
SAN DIEGO	10.8	9.6	12.1	14.8	16.6
SAN FRANCISCO	8.1	7.0	5.9	7.8	9.7
SAN JOAQUIN	11.9	13.2	11.6	14.8	15.3
SAN LUIS OBISPO	12.7	10.0	13.5	15.7	14.4
SAN MATEO	10.2	10.8	8.7	11.7	9.8
SANTA BARBARA	8.0	8.5	9.5	11.6	7.7
SANTA CLARA	11.9	14.7	14.7	12.2	8.6
SANTA CRUZ	16.3	21.4	21.5	26.0	21.6
SHASTA	16.5	13.3	20.9	14.0	15.0
SIERRA	0.0	46.2	14.0	30.1	31.6
SISKIYOU	24.5	32.9	16.3	19.6	15.8
SOLANO	15.5	12.2	14.6	7.8	11.4
SONOMA	6.1	9.6	8.1	8.9	5.7
STANISLAUS	10.4	15.6	13.8	14.3	14.4
SUTTER	19.7	10.9	7.9	15.8	17.7
TEHAMA	11.1	16.8	11.9	21.1	17.5
TRINITY	11.9	11.1	37.4	16.2	14.6
TULARE	27.6	34.7	19.7	23.1	22.5
TUOLUMNE	38.5	13.2	19.6	23.9	28.6
VENTURA	7.6	10.5	8.9	9.9	7.9
YOLO	13.2	14.9	16.2	16.7	16.4
YUBA	22.1	15.2	20.1	20.4	18.4
CALIFORNIA	10.8	11.3	11.5	12.2	12.0

Notes:
 Statistically unreliable rates are in italics.
 Rates are age-adjusted to the US Standard Million population.
 Data sources: 2000-2004 Death Statistical Master Files and Department of Finance Population Files.

Heart Failure Hospitalizations -- Age-Adjusted Rates per 1,000 Population (ICD-9 Code 428)

<i>Age Adjusted Discharge Rates per 1,000 population</i>					
<i>Heart Failure - All Races, Both Genders</i>					
County	Year				
	2000	2001	2002	2003	2004
ALAMEDA	10.2	10.2	10.8	11.8	13.1
ALPINE	0.9	3.6	1.7	5.0	2.2
AMADOR	13.0	12.0	11.4	12.8	14.3
BUTTE	10.0	10.3	9.4	10.8	11.9
CALAVERAS	7.6	9.0	9.6	9.4	9.6
COLUSA	8.1	7.5	6.3	8.1	11.4
CONTRA COSTA	9.6	9.2	9.3	10.2	10.5
DEL NORTE	8.6	8.3	9.7	11.3	15.4
EL DORADO	7.4	7.3	7.9	8.2	9.1
FRESNO	9.8	10.3	11.6	12.0	12.8
GLENN	8.4	7.5	7.8	9.0	8.9
HUMBOLDT	8.6	9.6	8.9	8.6	8.0
IMPERIAL	6.4	7.1	7.7	10.8	12.7
INYO	4.9	5.7	5.9	6.4	5.4
KERN	11.8	11.7	12.3	12.3	12.2
KINGS	11.6	11.8	12.5	14.6	14.4
LAKE	8.6	8.3	8.8	10.9	12.0
LASSEN	4.6	5.2	6.0	5.2	6.8
LOS ANGELES	10.3	10.6	10.9	12.3	11.2
MADERA	8.3	8.1	8.8	9.3	10.2
MARIN	6.6	6.9	6.7	7.6	7.7
MARIPOSA	7.9	9.9	10.3	10.7	8.1
MENDOCINO	8.0	8.5	7.6	8.3	9.2
MERCED	10.5	12.0	12.8	13.4	13.3
MODOC	5.2	5.6	5.8	6.1	5.5
MONO	2.2	2.3	2.7	2.1	2.3
MONTEREY	7.3	7.4	7.8	8.8	8.9
NAPA	8.2	7.5	8.7	10.5	10.2
NEVADA	9.0	7.8	7.6	8.4	9.0
ORANGE	9.9	9.9	10.1	10.7	9.9
PLACER	9.5	9.9	9.5	9.5	8.2
PLUMAS	9.8	6.8	7.4	8.3	7.7
RIVERSIDE	8.8	9.5	9.4	9.9	10.2
SACRAMENTO	11.0	10.2	10.6	11.2	11.1
SAN BENITO	6.9	7.4	9.3	10.7	12.5
SAN BERNARDINO	11.5	12.0	12.8	14.1	14.1
SAN DIEGO	8.3	8.4	9.3	10.0	9.9
SAN FRANCISCO	7.9	7.9	8.3	8.8	10.1
SAN JOAQUIN	10.1	10.2	10.7	12.4	14.7
SAN LUIS OBISPO	6.5	6.3	6.0	5.9	5.9
SAN MATEO	7.0	6.8	7.1	8.4	8.9
SANTA BARBARA	7.5	7.7	7.8	8.2	7.6
SANTA CLARA	7.3	7.6	7.7	8.6	8.7
SANTA CRUZ	8.4	8.1	8.8	9.5	10.2
SHASTA	10.5	10.0	10.0	10.8	10.0
SIERRA	5.1	5.5	6.4	7.7	5.3
SISKIYOU	7.7	7.7	7.5	7.7	6.6
SOLANO	10.2	10.4	11.7	13.3	11.6
SONOMA	8.1	7.9	7.8	8.7	8.6
STANISLAUS	12.1	11.6	12.1	12.8	13.4
SUTTER	11.0	9.7	11.4	12.8	12.8
TEHAMA	8.7	10.2	9.4	9.8	8.6
TRINITY	14.3	9.5	8.9	8.8	10.6
TULARE	11.9	11.0	11.8	12.6	14.7
TUOLUMNE	7.7	7.6	8.7	8.5	8.9
VENTURA	8.0	8.6	9.3	10.5	9.5
YOLO	9.2	8.6	8.0	10.0	9.4
YUBA	15.7	14.7	16.6	17.9	15.8
CALIFORNIA	9.4	9.5	9.9	10.9	10.7

Notes:
 Statistically unreliable rates are in italics.
 Rates are age-adjusted to the US Standard Million population.
 Data sources: 2000-2004 Death Statistical Master Files and Department of Finance Population Files.

Estimates for Risk Factors
California Adults

County or county group	High Cholesterol (2001 CHIS)	High Blood Pressure (2003 CHIS)	Diabetes (2003 CHIS)	Cigarette Smoking (2003 CHIS)	Overweight (2003 CHIS)	Obese (2003 CHIS)	Physical Inactivity (2001 CHIS)
Alameda	25.0	21.1	5.1	15.9	33.5	18.4	27.6
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine	29.9	29.9	7.0	18.2	39.9	18.7	20.3
Butte	35.4	26.6	4.3	21.2	35.7	21.9	19.6
Tehama, Glenn, Colusa	31.1	28.1	7.6	17.0	41.9	23.8	31.0
Contra Costa	31.7	26.5	5.8	15.1	34.5	20.5	26.5
Humboldt, Del Norte	33.9	25.0	6.0	19.1	30.6	22.2	22.2
El Dorado	26.9	25.7	4.3	16.3	38.8	16.0	17.8
Fresno	32.0	25.1	7.6	18.6	36.5	26.1	30.9
Imperial	30.0	24.3	10.9	19.6	36.5	32.8	37.0
Kern	32.8	27.5	7.3	22.4	37.7	27.3	31.2
Kings	38.7	21.6	8.1	21.1	36.1	30.5	31.6
Mendocino, Lake	30.2	32.9	6.3	26.1	34.6	26.2	24.1
Siskiyou, Lassen, Trinity, Modoc	34.8	30.0	6.7	25.4	36.5	22.8	23.4
Los Angeles	34.0	23.5	6.9	16.5	34.7	21.0	33.4
Madera	29.4	26.9	9.8	16.6	39.4	23.4	34.4
Marin	29.3	21.6	3.7	10.7	32.4	9.3	13.6
Merced	35.3	26.1	9.7	22.6	37.4	26.1	32.9
Monterey, San Benito	28.7	21.4	6.2	16.5	32.7	24.9	31.9
Napa	28.7	22.7	5.1	14.5	39.6	19.3	23.1
Nevada, Plumas, Sierra	30.4	25.7	3.9	19.0	32.3	16.6	16.9
Orange	34.3	20.6	6.6	15.3	35.3	15.0	25.3
Placer	29.7	20.8	5.5	15.4	41.5	15.3	16.9
Riverside	32.8	24.6	6.1	18.1	38.1	23.2	28.4
Sacramento	34.2	21.9	8.2	16.2	34.3	21.1	22.2
San Bernardino	31.7	25.9	8.5	18.9	37.0	28.0	30.4
San Diego	32.0	22.9	6.0	16.8	35.7	18.2	25.6
San Francisco	26.4	22.1	6.5	14.6	28.7	10.6	27.9
San Joaquin	33.2	29.1	7.6	16.4	33.5	27.1	29.3
San Luis Obispo	30.2	26.0	4.2	16.0	37.0	17.9	19.2
San Mateo	32.2	23.3	5.4	15.5	35.8	16.4	30.5
Santa Barbara	32.6	20.2	5.4	14.3	32.5	15.8	25.6
Santa Clara	30.4	21.6	5.5	11.7	34.0	17.5	25.7
Santa Cruz	29.9	19.3	4.1	13.8	32.2	18.3	19.1
Shasta	31.1	25.9	9.0	23.8	33.2	26.9	20.1
Solano	31.8	31.0	6.5	15.8	40.8	24.3	25.3
Sonoma	29.5	23.9	5.2	15.0	34.8	16.7	21.3
Stanislaus	32.2	21.4	5.9	21.5	42.0	23.5	32.0
Sutter, Yuba	35.0	23.6	8.7	23.8	37.1	20.5	30.5
Tulare	34.4	25.9	8.7	19.3	35.2	32.1	36.5
Ventura	31.5	22.5	5.1	13.4	30.6	19.6	27.3
Yolo	21.6	19.7	6.2	11.2	37.5	18.4	23.1
California	32.2	23.5	6.6	16.5	35.2	20.4	28.5

Note: Statistically unreliable prevalence estimates are in italics.
Data source: California Health Interview Survey (CHIS)

Methodology Used in Profile Section

Methodology for Descriptive Statistics

A number of data sources and statistical techniques were used to calculate the descriptive statistics presented in this plan. First, there is a discussion of mortality, morbidity, and population data, followed by a discussion of age-adjustment. Next, there is a description of the prevalence data. Finally, there is a discussion of the target setting methodology used in this plan, followed by disease definitions.

Mortality Data

The mortality data were generated using the 2000-2004 California Death Statistical Master Files (DSMF), available from the California Center for Health Statistics. Each DSMF is a collection of death records for California residents, regardless of place of occurrence of death, and for non-residents who died in California. The data included in this plan come from California residents only. Descriptive information about each decedent, such as gender, race/ethnicity, and age, was obtained from the death record, along with the decedent's underlying cause of death, based on the Tenth Revision of the International Classification of Diseases (ICD-10). For this plan, any death record with an underlying cause of death of heart disease (ICD-10 Codes I11, I20-I25), stroke (ICD-10 Codes I60-I69), or heart failure (ICD-10 Code I50) was used. All such records were aggregated into numerators for calculating mortality rates (along with population denominators described below), including by gender and race/ethnicity.

Morbidity Data

The morbidity data were generated using the 2000-2004 California Patient Discharge Data Files (PDDF), available from the California Office of Statewide Health Planning and Development. Each PDDF is a collection of hospital discharge records for inpatients discharged from all licensed acute care hospitals (i.e., general acute care hospitals, acute psychiatric hospitals, chemical dependency recovery hospitals, and psychiatric health facilities). The data included in this plan come from California residents only. Descriptive information about each discharge (i.e., not each patient, as one individual may have multiple inpatient hospital discharges over the course of a year), such as gender, race/ethnicity, and age, was obtained from the discharge record, along with the patient's diagnosis or diagnoses, based on the Ninth Revision of the International Classification of Diseases (ICD-9), at the time of discharge. On a given discharge abstract, a patient may have up to 25 different diagnoses listed. For this plan, any discharge record containing mention within the top 25 diagnoses listed on the discharge abstract of heart disease (ICD-9 Codes 402, 410-414, and 429.2), stroke (ICD-9 Codes 430-438), or heart failure (ICD-9 Code 428) was used. All such records were aggregated into numerators for calculating morbidity rates (along with population denominators described below), including by gender and race/ethnicity.

Population Data

Population data for 2000-2004 were obtained from the Demographic Research Unit of the California Department of Finance. Each annual file presents population counts by age,

gender, racial/ethnic group, and county of residence. For example, in 2004, in Alameda County, there were 775 white females who were 90 years old. Using these figures as denominators (along with mortality or morbidity numerators) allows for the calculation of annual mortality and morbidity rates. These rates were calculated overall and for each gender, racial/ethnic group, and county of residence.

Age-Adjustment

Age-adjustment is a statistical technique that allows for the comparison of the “risks” (here, mortality or morbidity rates) of two or more populations at one point in time or of one population at two or more points in time - independent of population-specific age differences. Indeed, age-adjustment is necessary, as the underlying age structures of the populations being compared with respect to “risk” most likely differ. For example, if two county-level heart disease mortality rates are being compared, and one county’s residents are “young” and one county’s residents are “old,” then the “old” county will appear to have an elevated “risk” profile, based only on the older age distribution of that county’s residents. In order to understand what actually might be conferring an independent, elevated level of risk on one of these two counties, the effect of age must be removed from the comparison via age-adjustment. Computationally, age-adjusted rates are generated via the Direct Method, by applying age-specific rates in a population of interest to a standardized age distribution (in this case, the United States Standard Million Population for the year 2000), in order to eliminate differences in observed rates that result from age differences in population composition.

Prevalence Data

All of the adult prevalence data (i.e., high cholesterol, high blood pressure, diabetes, cigarette smoking, overweight/obese, and physical inactivity) were generated using the Adult Survey (18+ years) of the California Health Interview Survey (CHIS), a new (begun in 2001 and conducted every two years) source of information on the health status of Californians and their ability to access health care services. CHIS is a telephone household survey using a two-stage geographically-stratified Random Digit Dial sample design which produced statistically reliable data for 41 California counties or county groups. In 2001, over 55,000 households participated in CHIS, and in 2003, the number of participating households dropped slightly to approximately 42,000 households. The self-reported responses from these households are “weighted” statistically in order to reflect what would be found if the survey were administered to all California households (i.e., the population from which the sample was drawn). While a wide range of topics have been included over the different administrations of CHIS, for this plan, the focus was on risk factors for heart disease, stroke, and heart failure. For each item of interest, a percent prevalence estimate (i.e., the proportion of the population for whom a condition is true, expressed as a percentage) was calculated. For example, the calculated percent prevalence of heart disease (7.0 percent) indicates that in the California adult population, seven out of 100 individuals had answered in the affirmative when asked if a physician had ever told them that they have heart disease. Prevalence estimates were calculated overall and for each gender, racial/ethnic group, and county or county group of residence.

Methodology for Target Setting

Throughout this plan, whenever possible, for the each of the objectives put forth, there is a proposed degree of change (improvement) desired - that is, for each goal that is presented, there is also a baseline data point and a target data point for the future. To determine what a given target data point should be (i.e., to quantify the improvement that should come about having carried out the given objective), a certain methodology was employed; several methodologies were used, according to the data available, and these are described below.

Healthy People 2010 (HP 2010) Method

The Healthy People 2010 (HP 2010) Method was used for some objectives. This entailed selecting the HP 2010 measure that was consistent with the plan objective and using the HP 2010 future target for that measure. For example, HP 2010 might call for a 20 percent reduction in a measure, relative to the baseline data point. If appropriate for a given objective in this plan, then a 20 percent reduction, relative to the baseline data point, was used to set the target. In the plan, this is referred to as the “HP 2010 goal-setting methodology.” For some measures (e.g., morbidity measures), however, there were no HP 2010 targets. In these cases, if appropriate, the 20 percent reduction was used, as well, and this is referred to as being “consistent with the HP 2010 goal-setting methodology.” Finally, in more than one case, however, the most recent data indicated that the HP 2010 target (i.e., published or calculated) either already had been met (e.g., as in the case of heart disease mortality) or essentially had been met (e.g., as in the case of stroke morbidity). For these measures, the target listed was the HP 2010 target, and then some commentary was provided to indicate more reasonable targets, determined via the use of the Ordinary Least Squares Regression Method, discussed below.

Ordinary Least Squares Regression Method

The Ordinary Least Squares Regression (OLSR) Method was used to determine targets when, for a given measure, data were available and the HP 2010 target was already met or very nearly met. Rather than use the HP 2010 target, the data points were plotted on a scatter plot and OLSR was used to determine the statistical relationship between the amount of change in the measure of interest and the time elapsed. This type of statistical relationship, for a given measure, was described by a line that would best fit amongst the data points on the scatter plot; this line was then defined by an equation in the form of $y = a + bx$, where y is the future outcome data point of interest, a is the y-intercept, b is the slope of the line, and x is the elapsed time. Using this equation and setting x to determine y for the year 2010, new targets were determined. Essentially, what this method does is answer the question: “Given the prevailing trend in the data over the study period, what can be expected for this measure by the year 2010, holding all things constant?”

Expert Panel Method

The Expert Panel Method was used for some objectives. This entailed having a group of subject matter experts (who either sit on the California Heart Disease and Stroke Prevention and Treatment Task Force or staff the California Heart Disease and Stroke Prevention Program) study the any available data and related factors and discuss reasonable targets for a given measure. Discussions included the directions and relative levels of strength in the prevailing trends - not only for the particular measure of interest but also for factors

associated with that measure. In other cases, from multiple data points for a given measure (collected from multiple data sources) the Expert Panel estimated a single, unweighted data point to be used as the target (e.g., for cholesterol screening following a heart attack or other serious health problem or surgery). In all cases, whether considering many different types of data or the same kind of data coming from many data sources, the Expert Panel came to a consensus as to what target would be appropriate for each objective of interest.

Disease Definitions

In calculating a rate, in order to identify a cause of death (for mortality) or a type of hospital discharge (for morbidity), the International Classification of Diseases (ICD) codes are used. Deaths are coded with ICD-10 codes (i.e., ICD codes from the 10th Revision), whereas hospital discharges - or morbidity measures - are coded with ICD-9 codes (i.e., ICD codes from the 9th Revision). In the Master Plan, the following ICD codes were used for the rate calculations:

Heart Disease:

Deaths: ICD-10 codes I11 (hypertensive heart disease), I20 (angina pectoris), I21 (acute myocardial infarction), I22 (subsequent myocardial infarction), I23 (certain current complications following acute myocardial infarction), I24 (other acute ischemic heart diseases), I25 (chronic ischemic heart disease).

Discharges: ICD-9 codes 402 (hypertensive heart disease), 410 (acute myocardial infarction), 411 (other acute and subacute forms of ischemic heart disease), 412 (old myocardial infarction), 413 (angina pectoris), 414 (other forms of chronic ischemic heart disease), 429.2 (cardiovascular disease, unspecified).

Stroke:

Deaths: ICD-10 codes I60 (subarachnoid hemorrhage), I61 (intracerebral hemorrhage), I62 (other nontraumatic intracranial hemorrhage), I63 (cerebral infarction), I64 (stroke, not specified as hemorrhage or infarction), I65 (occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction), I66 (occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction), I67 (other cerebrovascular diseases), I68 (cerebrovascular disorders in diseases classified elsewhere), I69 (sequelae of cerebrovascular disease).

Discharges: ICD-9 codes 430 (subarachnoid hemorrhage), 431 (intracerebral hemorrhage), 432 (other and unspecified intracranial hemorrhage), 433 (occlusion and stenosis of precerebral arteries), 434 (occlusion of cerebral arteries), 435 (transient cerebral ischemia), 436 (acute, but ill-defined, cerebrovascular disease), 437 (other and ill-defined cerebrovascular disease), 438 (late effects of cerebrovascular disease).

Heart Failure:

Deaths: ICD-10 code I50 (heart failure)

Discharges: ICD-9 code 428 (heart failure).

The codes listed above were not chosen arbitrarily; rather, the codes listed above (for each respective disease) represent the Healthy People 2010 (HP 2010) definitions for heart disease, stroke, and heart failure. While other definitions for some of these same measures (e.g., heart disease) may be used and will yield different calculated rates, no “acceptable” definition - and, therefore, no calculated rate - is incorrect (if the calculation is done properly).

Limitations of Data for American Indians

Caution must be exercised when evaluating racial/ethnic data. If population subgroups are small or underrepresented, or if individuals within a certain racial/ethnic group are commonly misclassified, then the calculated rates may not be an accurate representation of the true rates of disease for that population. Morbidity and mortality rates are calculated based on two numbers: the numerator, as in the number of deaths, and a denominator, an estimate of the population size. The denominator, is determined by the United States (U.S.) Census - a measure that is unlikely to have a large degree of misclassification error. In contrast, the numerator relies on the accuracy of the person who completes the death certificate or hospital registration form. In situations where an individual is unwilling or cannot state his/her racial/ethnic group, the medical provider might assign a patient to a group based on their visual appearance or surname. Often this decision is impacted by a preconceived notion of disease rates within specific racial/ethnic populations.

Compared with the general population in the U.S., rates for heart disease and stroke mortality have been consistently reported as lower for American Indians and Alaska Natives, despite the fact that this population has among the highest prevalence of risk factors for cardiovascular disease (i.e., smoking, diabetes, obesity). (1, 2) However, studies with American Indians, such as the Strong Heart Study, indicate that rates of heart disease and stroke events are much higher than reported and may be even higher than those of the general population. (3) The Indian Health Service (IHS) has assessed this inconsistency and has determined adjustment factors for 12 IHS regional areas. (4) Applying these methods to California data indicates that the rate of cardiovascular disease among Native Americans is 30.4 percent higher than the rate calculated with unadjusted numbers.

The data presented in the Profile of Disease Report have not been adjusted for suspected misclassification of American Indians; therefore, actual rates of disease in this population are likely to be higher.

References:

- 1 Rhoades DA. Racial misclassification and disparities in cardiovascular disease among American Indians and Alaska Natives. *Circ.* 2005;111:1250-56.
- 2 Welty TK, Lee ET, Yeh J, Cowan LD, Go O, Fabsitz RR, et al. Cardiovascular disease risk factors among American Indians. *The Strong Heart Study. Am J Epidemiol.* 1995;142:269-87.
- 3 Howard BV, Lee ET, Cowan LD, Fabsitz RR, Howard WJ, Oopik AJ, et al. Coronary heart disease prevalence and its relation to risk factors in American Indians. *The Strong Heart Study. Am J Epidemiol.* 1995;142:254-68.
- 4 Indian Health Service. Adjusting for miscoding of Indian race on State death certificates. Washington, DC: Department of Health and Human Services, Indian Health Services; 1996.

CDPH Programs that Target Risk Factors for Heart Disease and Stroke



California Obesity Prevention Initiative (COPI) works to reduce the prevalence of obesity and its related health risks in Californians through promoting physical activity and healthy eating. COPI addresses the societal, technological, and environmental influences on obesity.

Telephone: 916-552-9889, Fax: 916-552-9912

Web site: <http://www.dhs.ca.gov/obesityprevention>

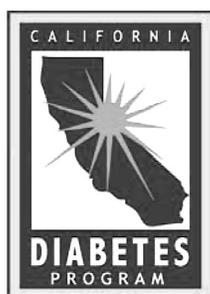
Plan: *Reversing the Obesity Epidemic: California's Strategies for Action*
<http://www.dhs.ca.gov/ps/cdic/copi/documents/Obesity%20Book%2012.pdf>



School Health Connections (SHC), a joint program of CDPH and CDE, supports a coordinated school health system including: health education; health services; physical education; counseling; healthful school environment; psychological and social services; parent and community involvement nutrition services; and health promotion for staff.

Telephone: 916-552-9889, Fax: 916-552-9912

Web site: <http://www.cde.ca.gov/schoolhealth>



The California Diabetes Program provides guidance and leadership to various organizations—from health care delivery systems to community groups that work to prevent diabetes and its complications.

Telephone: 916-552-9888, Fax: 916-552-9988

Web site: www.caldiabetes.org

Plan: *California's Plan for Diabetes 2003-2007* at
http://www.caldiabetes.org/content_display.cfm?contentID=91&categoryID=51



The California Center for Physical Activity creates opportunities for everyday activity by connecting partners to active living resources and helping develop more walkable and bikeable communities.

Telephone: 916-552-9874, Fax: 916-552-9912

Web site: <http://www.caphysicalactivity.org>



California Project LEAN (Leaders Encouraging Activity and Nutrition) aims to increase healthy eating and physical activity through unique approaches that utilize youth empowerment, policy and environmental change strategies, and community-based solutions. Assessment tools, educational resources, and research can be downloaded from the program's web site.

Telephone: 916-552-9907, Fax: 916-552-9909

Web site: <http://www.californiaprojectlean.org>



The California's Tobacco Control Section (TCS) strives to improve the health of all Californians by reducing illness and premature death attributable to the use of tobacco products. Through leadership, experience and research, the Tobacco Control Section empowers statewide and local health agencies to promote health and quality of life by advocating social norms that create a tobacco-free environment.

Telephone: 916-449-5500, Fax: 916-449-5505

Web site: <http://www.dhs.ca.gov/tobacco/>

Plan: "Toward a Tobacco-Free California 2006-2008: Confronting a Relentless Adversary, A Plan for Success" at <http://www.dhs.ca.gov/tobacco/documents/pubs/MasterPlan05.pdf>



The Preventive Health Care for the Aging Program (PHCA) serves to enhance and protect the health of Californians, 50 years and older. Goals are to promote healthy life styles, to increase access to health services, and to improve quality of life.

Telephone: 916-552-9892, Fax: 916-552-9996

Web sites: <http://www.nurseweb.ucsf.edu/iha/phca.htm>
<http://www.dhs.ca.gov/phca>



The California Nutrition Network for Healthy Active Families (Network) creates innovative partnerships so that low-income Californians are enabled to adopt healthy eating and physical activity patterns as part of a healthy lifestyle.

Telephone: 916-449-5400, Fax: 916-449-5414

Web site: <http://www.dhs.ca.gov/ps/cdic/cpns/network/>

Plan: *California Food Stamp Nutrition Education Plan for Federal Fiscal Year 2006* at <http://www.dhs.ca.gov/ps/cdic/cpns/FFY2006-Plan.html>

Reference Card From the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)



EVALUATION

CLASSIFICATION OF BLOOD PRESSURE (BP)*	SBP MMHG	DBP MMHG
Normal	<120	<80
Prehypertension	120–139	80–89
Hypertension, Stage 1	140–159	90–99
Hypertension, Stage 2	≥160	≥100

* See *Blood Pressure Measurement Techniques* (reverse side)
 Key: SBP = systolic blood pressure; DBP = diastolic blood pressure

DIAGNOSTIC WORKUP OF HYPERTENSION

- Assess risk factors and comorbidities.
- Reveal identifiable causes of hypertension.
- Assess presence of target organ damage.
- Conduct history and physical examination.
- Obtain laboratory tests: urinalysis, blood glucose, hematocrit and lipid panel, serum potassium, creatinine, and calcium. Optional: urinary albumin/creatinine ratio.
- Obtain electrocardiogram.

ASSESS FOR MAJOR CARDIOVASCULAR DISEASE (CVD)

- Hypertension
- Obesity (body mass index ≥ 30 kg/m²)
- Dyslipidemia
- Diabetes mellitus
- Cigarette smoking
- Physical inactivity
- Microalbuminuria, estimated glomerular filtration rate < 60 mL/min
- Age (> 55 for men, > 65 for women)
- Family history of premature CVD (men age < 55 , women age < 65)

ASSESS FOR IDENTIFIABLE CAUSES OF HYPERTENSION

- Sleep apnea
- Drug induced/related
- Chronic kidney disease
- Primary aldosteronism
- Renovascular disease
- Cushing's syndrome or steroid therapy
- Pheochromocytoma
- Coarctation of aorta
- Thyroid/parathyroid disease



TREATMENT

PRINCIPLES OF HYPERTENSION TREATMENT

- Treat to BP $< 140/90$ mmHg or BP $< 130/80$ mmHg in patients with diabetes or chronic kidney disease.
- Majority of patients will require two medications to reach goal.

ALGORITHM FOR TREATMENT OF HYPERTENSION

LIFESTYLE MODIFICATIONS

Not at Goal Blood Pressure ($< 140/90$ mmHg) ($< 130/80$ mmHg for patients with diabetes or chronic kidney disease)
 See *Strategies for Improving Adherence to Therapy*

INITIAL DRUG CHOICES

Without Compelling Indications

With Compelling Indications

Stage 1 Hypertension
 (SBP 140–159 or DBP 90–99 mmHg)
 Thiazide-type diuretics for most. May consider ACEI, ARB, BB, CCB, or combination.

Stage 2 Hypertension
 (SBP ≥ 160 or DBP ≥ 100 mmHg)
 2-drug combination for most (usually thiazide-type diuretic and ACEI, or ARB, or BB, or CCB).

Drug(s) for the compelling indications
 See *Compelling Indications for Individual Drug Classes*
 Other antihypertensive drugs (diuretics, ACEI, ARB, BB, CCB) as needed.

NOT AT GOAL BLOOD PRESSURE

Optimize dosages or add additional drugs until goal blood pressure is achieved. Consider consultation with hypertension specialist.

See *Strategies for Improving Adherence to Therapy*

BLOOD PRESSURE MEASUREMENT TECHNIQUES

METHOD	NOTES
In-office	Two readings, 5 minutes apart, sitting in chair. Confirm elevated reading in contralateral arm.
Ambulatory BP monitoring	Indicated for evaluation of “white coat hypertension.” Absence of 10–20 percent BP decrease during sleep may indicate increased CVD risk.
Patient self-check	Provides information on response to therapy. May help improve adherence to therapy and is useful for evaluating “white coat hypertension.”

CAUSES OF RESISTANT HYPERTENSION

- Improper BP measurement
- Excess sodium intake
- Inadequate diuretic therapy
- Medication
 - Inadequate doses
 - Drug actions and interactions (e.g., nonsteroidal anti-inflammatory drugs (NSAIDs), illicit drugs, sympathomimetics, oral contraceptives)
 - Over-the-counter (OTC) drugs and herbal supplements
- Excess alcohol intake
- Identifiable causes of hypertension (see reverse side)

COMPELLING INDICATIONS FOR INDIVIDUAL DRUG CLASSES

COMPELLING INDICATION	INITIAL THERAPY OPTIONS
• Heart failure	THIAZ, BB, ACEI, ARB, ALDO ANT
• Post myocardial infarction	BB, ACEI, ALDO ANT
• High CVD risk	THIAZ, BB, ACEI, CCB
• Diabetes	THIAZ, BB, ACEI, ARB, CCB
• Chronic kidney disease	ACEI, ARB
• Recurrent stroke prevention	THIAZ, ACEI

Key: THIAZ = thiazide diuretic, ACEI = angiotensin converting enzyme inhibitor, ARB = angiotensin receptor blocker, BB = beta blocker, CCB = calcium channel blocker, ALDO ANT = aldosterone antagonist

STRATEGIES FOR IMPROVING ADHERENCE TO THERAPY

- Clinician empathy increases patient trust, motivation, and adherence to therapy.
- Physicians should consider their patients’ cultural beliefs and individual attitudes in formulating therapy.

The National High Blood Pressure Education Program is coordinated by the National Heart, Lung, and Blood Institute (NHLBI) at the National Institutes of Health. Copies of the JNC 7 Report are available on the NHLBI Web site at <http://www.nhlbi.nih.gov> or from the NHLBI Health Information Center, P.O. Box 30105, Bethesda, MD 20824-0105; Phone: 301-592-8573 or 240-629-3255 (TTY); Fax: 301-592-8563.

PRINCIPLES OF LIFESTYLE MODIFICATION

- Encourage healthy lifestyles for all individuals.
- Prescribe lifestyle modifications for all patients with prehypertension and hypertension.
- Components of lifestyle modifications include weight reduction, DASH eating plan, dietary sodium reduction, aerobic physical activity, and moderation of alcohol consumption.

LIFESTYLE MODIFICATION RECOMMENDATIONS

MODIFICATION	RECOMMENDATION	AVG. SBP REDUCTION RANGE†
Weight reduction	Maintain normal body weight (body mass index 18.5–24.9 kg/m ²).	5–20 mmHg/10 kg
DASH eating plan	Adopt a diet rich in fruits, vegetables, and lowfat dairy products with reduced content of saturated and total fat.	8–14 mmHg
Dietary sodium reduction	Reduce dietary sodium intake to ≤100 mmol per day (2.4 g sodium or 6 g sodium chloride).	2–8 mmHg
Aerobic physical activity	Regular aerobic physical activity (e.g., brisk walking) at least 30 minutes per day, most days of the week.	4–9 mmHg
Moderation of alcohol consumption	Men: limit to ≤2 drinks* per day. Women and lighter weight persons: limit to ≤1 drink* per day.	2–4 mmHg

* 1 drink = 1/2 oz or 15 mL ethanol (e.g., 12 oz beer, 5 oz wine, 1.5 oz 80-proof whiskey).

† Effects are dose and time dependent.



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Heart, Lung, and Blood Institute
National High Blood Pressure Education Program

NIH Publication No. 03-5231
May 2003

ATP III Guidelines At-A-Glance Quick Desk Reference

1
Step 1 Determine lipoprotein levels—obtain complete lipoprotein profile after 9- to 12-hour fast.

ATP III Classification of LDL, Total, and HDL Cholesterol (mg/dL)

LDL Cholesterol – Primary Target of Therapy

<100	Optimal
100-129	Near optimal/above optimal
130-159	Borderline high
160-189	High
≥190	Very high

Total Cholesterol

<200	Desirable
200-239	Borderline high
≥240	High

HDL Cholesterol

<40	Low
≥60	High

2
Step 2 Identify presence of clinical atherosclerotic disease that confers high risk for coronary heart disease (CHD) events (CHD risk equivalent):

- Clinical CHD
- Symptomatic carotid artery disease
- Peripheral arterial disease
- Abdominal aortic aneurysm.

3
Step 3 Determine presence of major risk factors (other than LDL):

Major Risk Factors (Exclusive of LDL Cholesterol) That Modify LDL Goals

- Cigarette smoking
- Hypertension (BP ≥140/90 mmHg or on antihypertensive medication)
- Low HDL cholesterol (<40 mg/dL)*
- Family history of premature CHD (CHD in male first degree relative <55 years; CHD in female first degree relative <65 years)
- Age (men ≥45 years; women ≥55 years)

* HDL cholesterol ≥60 mg/dL counts as a “negative” risk factor; its presence removes one risk factor from the total count.

- Note: in ATP III, diabetes is regarded as a CHD risk equivalent.

High Blood Cholesterol



4

Step 4

If 2+ risk factors (other than LDL) are present without CHD or CHD risk equivalent, assess 10-year (short-term) CHD risk (see Framingham tables).

Three levels of 10-year risk:

- >20% — CHD risk equivalent
- 10-20%
- <10%

5

Step 5

Determine risk category:

- Establish LDL goal of therapy
- Determine need for therapeutic lifestyle changes (TLC)
- Determine level for drug consideration

LDL Cholesterol Goals and Cutpoints for Therapeutic Lifestyle Changes (TLC) and Drug Therapy in Different Risk Categories.

Risk Category	LDL Goal	LDL Level at Which to Initiate Therapeutic Lifestyle Changes (TLC)	LDL Level at Which to Consider Drug Therapy
CHD or CHD Risk Equivalents (10-year risk >20%)	<100 mg/dL	≥100 mg/dL	≥130 mg/dL (100-129 mg/dL: drug optional)*
2+ Risk Factors (10-year risk ≤20%)	<130 mg/dL	≥130 mg/dL	10-year risk 10-20%: ≥130 mg/dL 10-year risk <10%: ≥160 mg/dL
0-1 Risk Factor†	<160 mg/dL	≥160 mg/dL	≥190 mg/dL (160-189 mg/dL: LDL-lowering drug optional)

* Some authorities recommend use of LDL-lowering drugs in this category if an LDL cholesterol <100 mg/dL cannot be achieved by therapeutic lifestyle changes. Others prefer use of drugs that primarily modify triglycerides and HDL, e.g., nicotinic acid or fibrate. Clinical judgment also may call for deferring drug therapy in this subcategory.

† Almost all people with 0-1 risk factor have a 10-year risk <10%, thus 10-year risk assessment in people with 0-1 risk factor is not necessary.

6

Step 6

Initiate therapeutic lifestyle changes (TLC) if LDL is above goal.

TLC Features

- TLC Diet:
 - Saturated fat <7% of calories, cholesterol <200 mg/day
 - Consider increased viscous (soluble) fiber (10-25 g/day) and plant stanols/sterols (2g/day) as therapeutic options to enhance LDL lowering
- Weight management
- Increased physical activity.

Consider adding drug therapy if LDL exceeds levels shown in Step 5 table:

- Consider drug simultaneously with TLC for CHD and CHD equivalents
- Consider adding drug to TLC after 3 months for other risk categories.

Drugs Affecting Lipoprotein Metabolism

Drug Class	Agents and Daily Doses	Lipid/Lipoprotein Effects	Side Effects	Contraindications
HMG CoA reductase inhibitors (statins)	Lovastatin (20-80 mg) Pravastatin (20-40 mg) Simvastatin (20-80 mg) Fluvastatin (20-80 mg) Atorvastatin (10-80 mg) Cerivastatin (0.4-0.8 mg)	LDL ↓18-55% HDL ↑5-15% TG ↓7-30%	Myopathy Increased liver enzymes	Absolute: • Active or chronic liver disease Relative: • Concomitant use of certain drugs*
Bile acid sequestrants	Cholestyramine (4-16 g) Colestipol (5-20 g) Colesevelam (2.6-3.8 g)	LDL ↓15-30% HDL ↑3-5% TG No change or increase	Gastrointestinal distress Constipation Decreased absorption of other drugs	Absolute: • dysbeta-lipoproteinemia • TG >400 mg/dL Relative: • TG >200 mg/dL
Nicotinic acid	Immediate release (crystalline) nicotinic acid (1.5-3 gm), extended release nicotinic acid (Niaspan®) (1-2 g), sustained release nicotinic acid (1-2 g)	LDL ↓5-25% HDL ↑15-35% TG ↓20-50%	Flushing Hyperglycemia Hyperuricemia (or gout) Upper GI distress Hepatotoxicity	Absolute: • Chronic liver disease • Severe gout Relative: • Diabetes • Hyperuricemia • Peptic ulcer disease
Fibric acids	Gemfibrozil (600 mg BID) Fenofibrate (200 mg) Clofibrate (1000 mg BID)	LDL ↓5-20% <i>(may be increased in patients with high TG)</i> HDL ↑10-20% TG ↓20-50%	Dyspepsia Gallstones Myopathy	Absolute: • Severe renal disease • Severe hepatic disease

* Cyclosporine, macrolide antibiotics, various anti-fungal agents, and cytochrome P-450 inhibitors (fibrates and niacin should be used with appropriate caution).

Identify metabolic syndrome and treat, if present, after 3 months of TLC.

Clinical Identification of the Metabolic Syndrome – Any 3 of the Following:

Risk Factor	Defining Level
Abdominal obesity*	Waist circumference [†]
Men	>102 cm (>40 in)
Women	>88 cm (>35 in)
Triglycerides	≥150 mg/dL
HDL cholesterol	
Men	<40 mg/dL
Women	<50 mg/dL
Blood pressure	≥130/≥85 mmHg
Fasting glucose	≥110 mg/dL

* *Overweight and obesity are associated with insulin resistance and the metabolic syndrome. However, the presence of abdominal obesity is more highly correlated with the metabolic risk factors than is an elevated body mass index (BMI). Therefore, the simple measure of waist circumference is recommended to identify the body weight component of the metabolic syndrome.*

† *Some male patients can develop multiple metabolic risk factors when the waist circumference is only marginally increased, e.g., 94-102 cm (37-39 in). Such patients may have a strong genetic contribution to insulin resistance. They should benefit from changes in life habits, similarly to men with categorical increases in waist circumference.*

Treatment of the metabolic syndrome

- Treat underlying causes (overweight/obesity and physical inactivity):
 - Intensify weight management
 - Increase physical activity.
- Treat lipid and non-lipid risk factors if they persist despite these lifestyle therapies:
 - Treat hypertension
 - Use aspirin for CHD patients to reduce prothrombotic state
 - Treat elevated triglycerides and/or low HDL (as shown in Step 9).

Treat elevated triglycerides.

ATP III Classification of Serum Triglycerides (mg/dL)

<150	Normal
150-199	Borderline high
200-499	High
≥500	Very high

Treatment of elevated triglycerides (≥150 mg/dL)

- Primary aim of therapy is to reach LDL goal
- Intensify weight management
- Increase physical activity
- If triglycerides are ≥200 mg/dL after LDL goal is reached, set secondary goal for non-HDL cholesterol (total – HDL) 30 mg/dL higher than LDL goal.

Comparison of LDL Cholesterol and Non-HDL Cholesterol Goals for Three Risk Categories

Risk Category	LDL Goal (mg/dL)	Non-HDL Goal (mg/dL)
CHD and CHD Risk Equivalent (10-year risk for CHD >20%)	<100	<130
Multiple (2+) Risk Factors and 10-year risk ≤20%	<130	<160
0-1 Risk Factor	<160	<190

If triglycerides 200-499 mg/dL after LDL goal is reached, consider adding drug if needed to reach non-HDL goal:

- intensify therapy with LDL-lowering drug, or
- add nicotinic acid or fibrate to further lower VLDL.

If triglycerides ≥500 mg/dL, first lower triglycerides to prevent pancreatitis:

- very low-fat diet (≤15% of calories from fat)
- weight management and physical activity
- fibrate or nicotinic acid
- when triglycerides <500 mg/dL, turn to LDL-lowering therapy.

Treatment of low HDL cholesterol (<40 mg/dL)

- First reach LDL goal, then:
- Intensify weight management and increase physical activity
- If triglycerides 200-499 mg/dL, achieve non-HDL goal
- If triglycerides <200 mg/dL (isolated low HDL) in CHD or CHD equivalent consider nicotinic acid or fibrate.

Men Estimate of 10-Year Risk for Men

(Framingham Point Scores)

Age	Points
20-34	-9
35-39	-4
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	11
70-74	12
75-79	13

Total Cholesterol	Points				
	Age 20-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79
<160	0	0	0	0	0
160-199	4	3	2	1	0
200-239	7	5	3	1	0
240-279	9	6	4	2	1
≥280	11	8	5	3	1

	Points				
	Age 20-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79
Nonsmoker	0	0	0	0	0
Smoker	8	5	3	1	1

HDL (mg/dL)	Points
≥60	-1
50-59	0
40-49	1
<40	2

Systolic BP (mmHg)	If Untreated	If Treated
<120	0	0
120-129	0	1
130-139	1	2
140-159	1	2
≥160	2	3

Point Total	10-Year Risk %
<0	< 1
0	1
1	1
2	1
3	1
4	1
5	2
6	2
7	3
8	4
9	5
10	6
11	8
12	10
13	12
14	16
15	20
16	25
≥17	≥ 30

10-Year risk _____%

Women Estimate of 10-Year Risk for Women

(Framingham Point Scores)

Age	Points
20-34	-7
35-39	-3
40-44	0
45-49	3
50-54	6
55-59	8
60-64	10
65-69	12
70-74	14
75-79	16

Total Cholesterol	Points				
	Age 20-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79
<160	0	0	0	0	0
160-199	4	3	2	1	1
200-239	8	6	4	2	1
240-279	11	8	5	3	2
≥280	13	10	7	4	2

	Points				
	Age 20-39	Age 40-49	Age 50-59	Age 60-69	Age 70-79
Nonsmoker	0	0	0	0	0
Smoker	9	7	4	2	1

HDL (mg/dL)	Points
≥60	-1
50-59	0
40-49	1
<40	2

Systolic BP (mmHg)	If Untreated	If Treated
<120	0	0
120-129	1	3
130-139	2	4
140-159	3	5
≥160	4	6

Point Total	10-Year Risk %
< 9	< 1
9	1
10	1
11	1
12	1
13	2
14	2
15	3
16	4
17	5
18	6
19	8
20	11
21	14
22	17
23	22
24	27
≥25	≥ 30

10-Year risk _____%

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Institutes of Health
National Heart, Lung, and Blood Institute

NIH Publication No. 01-3305
May 2001

HEDIS® 2006 Summary Table of Measures and Product Lines

HEDIS 2006 Measures	Applicable to:			
	Medicaid	Commercial	Medicare	PPO
Effectiveness of Care				
Childhood Immunization Status	✓	✓		
Adolescent Immunization Status	✓	✓		
Appropriate Treatment for Children With Upper Respiratory Infection	✓	✓		
Appropriate Testing for Children With Pharyngitis	✓	✓		
Inappropriate Antibiotic Treatment for Adults With Acute Bronchitis	✓	✓		
Colorectal Cancer Screening		✓	✓	
Breast Cancer Screening	✓	✓	✓	
Cervical Cancer Screening	✓	✓		
Chlamydia Screening in Women	✓	✓		
Osteoporosis Management in Women Who Had a Fracture			✓	
Controlling High Blood Pressure	✓	✓	✓	
Beta-Blocker Treatment After a Heart Attack	✓	✓	✓	
Persistence of Beta-Blocker Treatment After a Heart Attack	✓	✓	✓	
Cholesterol Management for Patients With Cardiovascular Conditions	✓	✓	✓	
Comprehensive Diabetes Care	✓	✓	✓	
Use of Appropriate Medications for People With Asthma	✓	✓		
User of Spirometry Testing in the Assessment and Diagnosis of Chronic Obstructive Pulmonary Disease (COPD)	✓	✓	✓	
Follow-Up After Hospitalization for Mental Illness	✓	✓	✓	
Antidepressant Medication Management	✓	✓	✓	
Follow-Up Care for Children Prescribed Attention-Deficit/Hyperactivity Disorder (ADHD) Medication	✓	✓	✓	
Glaucoma Screening in Older Adults	✓	✓	✓	
Use of Imaging Studies for Low Back Pain	✓	✓	✓	
Disease Modifying Anti-Rheumatic Drug Therapy in Rheumatoid Arthritis	✓	✓	✓	
Annual Monitoring for Patients on Persistent Medications	✓	✓	✓	
Drugs to Be Avoided in the Elderly	✓	✓	✓	

HEDIS 2006 Measures	Applicable to:				PPO
	Medicaid	Commercial	Medicare		
Effectiveness of Care					
Medical Assistance With Smoking Cessation	✓	✓	✓	✓ (ASTQ only)	
Flu Shots for Adults Age 50–64		✓			
Flu Shots for Older Adults				✓	
Pneumonia Vaccination Status for Older Adults				✓	
Medicare Health Outcomes Survey				✓	
Management of Urinary Incontinence in Older Adults				✓	
Physical Activity in Older Adults				✓	
Access/Availability of Care					
Adults' Access to Preventive/Ambulatory Health Services	✓	✓		✓	
Children and Adolescents' Access to Primary Care Practitioners	✓	✓			
Prenatal and Postpartum Care	✓	✓			
Annual Dental Visit	✓				
Initiation and Engagement of Alcohol and Other Drug Dependence Treatment	✓	✓		✓	
Claims Timeliness	✓	✓		✓	✓
Call Answer Timeliness	✓	✓		✓	✓
Call Abandonment	✓	✓		✓	✓
Satisfaction With the Experience of Care					
CAHPS 3.0H Adult Survey	✓	✓			
CAHPS 3.0H Child Survey	✓	✓			
Children With Chronic Conditions	✓	✓			
Health Plan Stability					
Practitioner Turnover	✓	✓		✓	
Years in Business/Total Membership	✓	✓		✓	
Use of Services					
Specific Guidelines for Use of Services Measures					
Frequency of Ongoing Prenatal Care	✓				
Well-Child Visits in the First 15 Months of Life	✓	✓			
Well-Child Visits in the Third, Fourth, Fifth and Sixth Years of Life	✓	✓			
Adolescent Well-Care Visits	✓	✓			

Appendix I

HEDIS 2005 Measures	Applicable to:			PPO
	Medicaid	Commercial	Medicare	
Use of Services				
Frequency of Selected Procedures	✓	✓	✓	✓
Inpatient Utilization—General Hospital/Acute Care	✓	✓	✓	✓
Ambulatory Care	✓	✓	✓	✓
Inpatient Utilization—Nonacute Care	✓	✓	✓	✓
Discharge and Average Length of Stay—Maternity Care	✓	✓	✓	✓
Births and Average Length of Stay, Newborns	✓	✓	✓	✓
Mental Health Utilization—Inpatient Discharges and Average Length of Stay	✓	✓	✓	✓
Mental Health Utilization—Percentage of Members Receiving Inpatient and Intermediate Care and Ambulatory Services	✓	✓	✓	✓
Chemical Dependency Utilization—Inpatient Discharges and Average Length of Stay	✓	✓	✓	✓
Identification of Alcohol and Other Drug Services	✓	✓	✓	✓
Outpatient Drug Utilization	✓	✓	✓	✓
Antibiotic Utilization	✓	✓	✓	✓
Cost of Care				
Informed Health Care Choices				
Health Plan Descriptive Information				
Board Certification	✓	✓	✓	✓
Enrollment by Product Line	✓	✓	✓	✓
Enrollment by State	✓	✓	✓	✓
Race/Ethnicity Diversity of Membership	✓	✓	✓	✓
Language Diversity of Medicaid Membership	✓	✓	✓	✓
Weeks of Pregnancy at Time of Enrollment in the MCO	✓	✓	✓	✓

Resources

American Heart Association - National Center
<http://www.americanheart.org>

American Stroke Association
<http://www.strokeassociation.org>

California Center for Physical Activity
<http://www.caphysicalactivity.org>

California Diabetes Program
<http://www.caldiabetes.org>

California Heart Disease and Stroke Prevention Program
<http://www.dhs.ca.gov/cvd>

- Inventory of California Policies on Heart Disease, Stroke, and Related Risk Factors
- The Burden of Cardiovascular Disease in California
- 2004 Public Forums Report on Heart Disease and Stroke Prevention and Treatment

California Nutrition Network for Healthy, Active Families
<http://www.dhs.ca.gov/ps/cdic/CPNS/network/>

California Obesity Prevention Initiative
<http://www.dhs.ca.gov/obesityprevention>

California Project LEAN (Leaders Encouraging Activity and Nutrition)
<http://www.californiaprojectlean.org>

Centers for Disease Control and Prevention
<http://www.cdc.gov>

Division for Heart Disease and Stroke Prevention
<http://www.cdc.gov/dhdsp/index.htm>

Healthy People 2010
<http://www.healthypeople.gov>

Appendix I

National Institutes of Health
<http://www.nih.gov>

National Cholesterol Education Program
<http://www.nhlbi.nih.gov/about/ncep>

National Heart, Lung, and Blood Institute
<http://www.nhlbi.nih.gov>

National Heart Attack Alert Program
<http://www.nhlbi.nih.gov/about/nhaap>

National High Blood Pressure Education Program
<http://www.nhlbi.nih.gov/about/nhbpep>

National Institute of Neurological Disorders and Stroke
<http://www.ninds.nih.gov>

National Stroke Association
<http://www.stroke.org>

Preventive Health Care for the Aging
<http://www.dhs.ca.gov/phca>

School Health Connections
<http://www.dhs.ca.gov/schoolhealth>

Tobacco Control Section
<http://www.dhs.ca.gov/tobacco>

Tobacco Free California
<http://www.tobaccofreeca.org>

Healthy People 2010—Summary of Objectives

Heart Disease and Stroke

Goal: Improve cardiovascular health and quality of life through the prevention, detection, and treatment of risk factors; early identification and treatment of heart attacks and strokes; and prevention of recurrent cardiovascular events.

Number	Objective Short Title
---------------	------------------------------

Heart Disease

- | | |
|------|---|
| 12-1 | Coronary heart disease (CHD) deaths |
| 12-2 | Knowledge of symptoms of heart attack and importance of calling 911 |
| 12-3 | Artery-opening therapy |
| 12-4 | Bystander response to cardiac arrest |
| 12-5 | Out-of-hospital emergency care |
| 12-6 | Heart failure hospitalizations |

Stroke

- | | |
|------|---|
| 12-7 | Stroke deaths |
| 12-8 | Knowledge of early warning symptoms of stroke |

Blood Pressure

- | | |
|-------|---------------------------------------|
| 12-9 | High blood pressure |
| 12-10 | High blood pressure control |
| 12-11 | Action to help control blood pressure |
| 12-12 | Blood pressure monitoring |

Cholesterol

- | | |
|-------|---------------------------------------|
| 12-13 | Mean total blood cholesterol levels |
| 12-14 | High blood cholesterol levels |
| 12-15 | Blood cholesterol screening |
| 12-16 | LDL-cholesterol level in CHD patients |

Healthy People 2010 Objectives

Heart Disease

12-1. Reduce coronary heart disease deaths.

Target: 166 deaths per 100,000 population.

Baseline: 208 coronary heart disease deaths per 100,000 population in 1998 (age adjusted to the year 2000 standard population).

Target setting method: 20 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

NOTE: THE TABLE BELOW MAY CONTINUE TO THE FOLLOWING PAGE.

Total Population, 1998	Coronary Heart Disease Deaths
	Rate per 100,000
TOTAL	208
Race and ethnicity	
American Indian or Alaska Native	126
Asian or Pacific Islander	123
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	252
White	206
Hispanic or Latino	145
Not Hispanic or Latino	211
Black or African American	257
White	208
Gender	
Female	165
Male	265
Education level (aged 25 to 64 years)	
Less than high school	96
High school graduate	80
At least some college	38

Total Population, 1998	Coronary Heart Disease Deaths
	Rate per 100,000
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
 Note: Age adjusted to the year 2000 standard population.

NOTE: THE TABLE ABOVE MAY HAVE CONTINUED FROM THE PREVIOUS PAGE.

12-2. (Developmental) Increase the proportion of adults aged 20 years and older who are aware of the early warning symptoms and signs of a heart attack and the importance of accessing rapid emergency care by calling 911.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

12-3. (Developmental) Increase the proportion of eligible patients with heart attacks who receive artery-opening therapy within an hour of symptom onset.

Potential data source: National Registry of Myocardial Infarction, National Acute Myocardial Infarction Project, HCFA.

12-4. (Developmental) Increase the proportion of adults aged 20 years and older who call 911 and administer cardiopulmonary resuscitation (CPR) when they witness an out-of-hospital cardiac arrest.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

12-5. (Developmental) Increase the proportion of eligible persons with witnessed out-of-hospital cardiac arrest who receive their first therapeutic electrical shock within 6 minutes after collapse recognition.

Potential data source: Medical Expenditure Panel Survey (MEPS), AHRQ.

12-6. Reduce hospitalizations of older adults with congestive heart failure as the principal diagnosis.

Target and baseline:

Objective	Reduction in Hospitalizations of Older Adults With Congestive Heart Failure as the Principal Diagnosis	1997 Baseline <i>Per 1,000 Population</i>	2010 Target
12-6a.	Adults aged 65 to 74 years	13.2	6.5
12-6b.	Adults aged 75 to 84 years	26.7	13.5
12-6c.	Adults aged 85 years and older	52.7	26.5

Target setting method: Better than the best.

Data source: National Hospital Discharge Survey (NHDS), CDC, NCHS.

NOTE: THE TABLE BELOW MAY CONTINUE TO THE FOLLOWING PAGE.

Adults With Congestive Heart Failure as Principal Diagnosis, 1997	Heart Failure Hospitalizations		
	12-6a. Aged 65 to 74 Years	12-6b. Aged 75 to 84 Years	12-6c. Aged 85 Years and Older
	Rate per 1,000		
TOTAL	13.2	26.7	52.7
Race and ethnicity			
American Indian or Alaska Native	DSU	DSU	DSU
Asian or Pacific Islander	DSU	DSU	DSU
Asian	DNC	DNC	DNC
Native Hawaiian and other Pacific Islander	DNC	DNC	DNC
Black or African American	20.0	21.4	47.0
White	9.9	21.4	41.8
Hispanic or Latino	DSU	DSU	DSU
Not Hispanic or Latino	DSU	DSU	DSU
Black or African American	DSU	DSU	DSU
White	DSU	DSU	DSU

Adults With Congestive Heart Failure as Principal Diagnosis, 1997	Heart Failure Hospitalizations		
	12-6a. Aged 65 to 74 Years	12-6b. Aged 75 to 84 Years	12-6c. Aged 85 Years and Older
	Rate per 1,000		
Gender			
Female	11.5	25.0	50.2
Male	15.3	29.2	58.8
Education level			
Less than high school	DNC	DNC	DNC
High school graduate	DNC	DNC	DNC
At least some college	DNC	DNC	DNC
Disability status			
People with disabilities	DNC	DNC	DNC
People without disabilities	DNC	DNC	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

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Stroke

12-7. Reduce stroke deaths.

Target: 48 deaths per 100,000 population.

Baseline: 60 deaths from stroke per 100,000 population occurred in 1998 (age adjusted to the year 2000 standard population).

Target setting method: 20 percent improvement.

Data source: National Vital Statistics System (NVSS), CDC, NCHS.

NOTE: THE TABLE BELOW MAY CONTINUE TO THE FOLLOWING PAGE.

Total Population, 1998	Stroke Deaths
	Rate per 100,000
TOTAL	60
Race and ethnicity	
American Indian or Alaska Native	38
Asian or Pacific Islander	51
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	80
White	58

Total Population, 1998	Stroke Deaths
	Rate per 100,000
Hispanic or Latino	39
Not Hispanic or Latino	60
Black or African American	82
White	58
Gender	
Female	58
Male	60
Education level (aged 25 to 64 years)	
Less than high school	22
High school graduate	17
At least some college	8
Disability status	
Persons with disabilities	DNC
Persons without disabilities	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
 Note: Age adjusted to the year 2000 standard population.

NOTE: THE TABLE ABOVE MAY HAVE CONTINUED FROM THE PREVIOUS PAGE.

12-8. (Developmental) Increase the proportion of adults who are aware of the early warning symptoms and signs of a stroke.

Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

Blood Pressure

12-9. Reduce the proportion of adults with high blood pressure.

Target: 16 percent.

Baseline: 28 percent of adults aged 20 years and older had high blood pressure in 1988–94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 Years and Older, 1988–94 (unless noted)	High Blood Pressure
	Percent
TOTAL	28
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	40
White	27
Hispanic or Latino	DSU
Mexican American	29
Not Hispanic or Latino	28
Black or African American	40
White	27
Gender	
Female	26
Male	30
Family income level	
Poor	32
Near poor	30
Middle/high income	27
Disability status	
Persons with disabilities	32 (1991–94)
Persons without disabilities	27 (1991–94)
Select populations	
Persons with diabetes	DNA
Persons without diabetes	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
 Note: Age adjusted to the year 2000 standard population.

12-10. Increase the proportion of adults with high blood pressure whose blood pressure is under control.

Target: 50 percent.

Baseline: 18 percent of adults aged 18 years and older with high blood pressure had it under control in 1988–94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

NOTE: THE TABLE BELOW MAY CONTINUE TO THE FOLLOWING PAGE.

Adults Aged 18 Years and Older With High Blood Pressure, 1988–94 (unless noted)	Blood Pressure Controlled
	Percent
TOTAL	18
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	19
White	18
Hispanic or Latino	DSU
Mexican American	13
Not Hispanic or Latino	DNA
Black or African American	19
White	18
Gender	
Female	28
Male	13
Family income level	
Poor	25
Near poor	20
Middle/high income	16
Disability status (aged 20 years and older)	
Persons with disabilities	24 (1991–94)
Persons without disabilities	16 (1991–94)

Adults Aged 18 Years and Older With High Blood Pressure, 1988–94 (unless noted)	Blood Pressure Controlled
	Percent
Select populations	
Persons with diabetes	DNA
Persons without diabetes	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

NOTE: THE TABLE ABOVE MAY HAVE CONTINUED FROM THE PREVIOUS PAGE.

12-11. Increase the proportion of adults with high blood pressure who are taking action (for example, losing weight, increasing physical activity, or reducing sodium intake) to help control their blood pressure.

Target: 95 percent.

Baseline: 82 percent of adults aged 18 years and older with high blood pressure were taking action to control it in 1998 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

NOTE: THE TABLE BELOW MAY CONTINUE TO THE FOLLOWING PAGE.

Adults Aged 18 Years and Older With High Blood Pressure, 1998 (unless noted)	Taking Action To Control Blood Pressure
	Percent
TOTAL	82
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	76
Asian	75
Native Hawaiian and other Pacific Islander	DSU
Black or African American	86
White	80
Hispanic or Latino	74
Not Hispanic or Latino	83
Black or African American	87
White	81

Adults Aged 18 Years and Older With High Blood Pressure, 1998 (unless noted)	Taking Action To Control Blood Pressure
	Percent
Gender	
Female	83
Male	80
Family income level	
Poor	80
Near poor	79
Middle/high income	81
Disability status	
Persons with activity limitations	84 (1994)
Persons without activity limitations	76 (1994)
Geographic variation	
Urban	83
Rural	80
Select populations	
Persons with diabetes	DNA
Persons without diabetes	DNA

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
 Note: Age adjusted to the year 2000 standard population.

NOTE: THE TABLE ABOVE MAY HAVE CONTINUED FROM THE PREVIOUS PAGE.

12-12. Increase the proportion of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was normal or high.

Target: 95 percent.

Baseline: 90 percent of adults aged 18 years and older had their blood pressure measured in the past 2 years and could state whether it was normal or high in 1998 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

Adults Aged 18 Years and Older, 1998 (unless noted)	Had Blood Pressure Measured in Past 2 Years and Knew Whether It Was Normal or High
	Percent
TOTAL	90
Race and ethnicity	
American Indian or Alaska Native	89
Asian or Pacific Islander	86
Asian	86
Native Hawaiian and other Pacific Islander	86
Black or African American	92
White	90
Hispanic or Latino	84
Not Hispanic or Latino	91
Black or African American	92
White	91
Gender	
Female	92
Male	87
Education level (aged 25 years and older)	
Less than high school	84
High school graduate	90
At least some college	93
Disability status	
Persons with activity limitations	90 (1994)
Persons without activity limitations	84 (1994)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

Cholesterol

12-13. Reduce the mean total blood cholesterol levels among adults.

Target: 199 mg/dL (mean).

Baseline: 206 mg/dL was the mean total blood cholesterol level for adults aged 20 years and older in 1988–94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Adults Aged 20 Years and Older, 1988–94 (unless noted)	Mean Cholesterol Level
	mg/dL
TOTAL	206
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	204
White	206
Hispanic or Latino	
Hispanic or Latino	DSU
Mexican American	205
Not Hispanic or Latino	206
Black or African American	204
White	206
Gender	
Female	207
Male	204
Family income level	
Poor	205
Near poor	204
Middle/high income	206
Disability status	
Persons with disabilities	208 (1991–94)
Persons without disabilities	204 (1991–94)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

12-14. Reduce the proportion of adults with high total blood cholesterol levels.

Target: 17 percent.

Baseline: 21 percent of adults aged 20 years and older had total blood cholesterol levels of 240 mg/dL or greater in 1988–94 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

NOTE: THE TABLE BELOW MAY CONTINUE TO THE FOLLOWING PAGE.

Adults Aged 20 Years and Older, 1988–94 (unless noted)	Total Blood Cholesterol Level of 240 mg/dL or Greater
	Percent
TOTAL	21
Race and ethnicity	
American Indian or Alaska Native	DSU
Asian or Pacific Islander	DSU
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	19
White	21
Hispanic or Latino	
Hispanic or Latino	DNC
Mexican American	18
Not Hispanic or Latino	DNA
Black or African American	19
White	21
Gender	
Female	22
Male	19
Education level	
Less than high school	22
High school graduate	22
At least some college	19

Adults Aged 20 Years and Older, 1988–94 (unless noted)	Total Blood Cholesterol Level of 240 mg/dL or Greater
	Percent
Disability status	
Persons with disabilities	24 (1991–94)
Persons without disabilities	19 (1991–94)

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

NOTE: THE TABLE ABOVE MAY HAVE CONTINUED FROM THE PREVIOUS PAGE.

12-15. Increase the proportion of adults who have had their blood cholesterol checked within the preceding 5 years.

Target: 80 percent.

Baseline: 67 percent of adults aged 18 years and older had their blood cholesterol checked within the preceding 5 years in 1998 (age adjusted to the year 2000 standard population).

Target setting method: Better than the best.

Data source: National Health Interview Survey (NHIS), CDC, NCHS.

NOTE: THE TABLE BELOW MAY CONTINUE TO THE FOLLOWING PAGE.

Adults Aged 18 Years and Older, 1998 (unless noted)	Blood Cholesterol Checked in Past 5 Years
	Percent
TOTAL	67
Race and ethnicity	
American Indian or Alaska Native	58
Asian or Pacific Islander	68
Asian	69
Native Hawaiian and other Pacific Islander	65
Black or African American	67
White	67
Hispanic or Latino	59
Not Hispanic or Latino	68
Black or African American	67
White	70

Adults Aged 18 Years and Older, 1998 (unless noted)	Blood Cholesterol Checked in Past 5 Years
	Percent
Gender	
Female	70
Male	64
Education level (aged 25 years and older)	
Less than high school	58
High school graduate	69
At least some college	78
Disability status	
Persons with activity limitations	72 (1993)
Persons without activity limitations	66 (1993)
Geographic variation	
Urban	68
Rural	63

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Age adjusted to the year 2000 standard population.

NOTE: THE TABLE ABOVE MAY HAVE CONTINUED FROM THE PREVIOUS PAGE.

12-16. (Developmental) Increase the proportion of persons with coronary heart disease who have their LDL-cholesterol level treated to a goal of less than or equal to 100 mg/dL.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

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*The mission of the CHDSP Program is to reduce premature death
and disability from heart disease and stroke
among Californians.*

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