

# California Food Guide

## Cardiovascular Disease

By Sharon B. Sugerman, M.S., R.D., F.A.D.A. and Alexandra E. Ossa, M.P.H.



### **Public Health Implications**

Cardiovascular disease (CVD) and stroke are the first and third causes of death in the United States.<sup>1</sup> Over one-third of all deaths in the U.S. are due to CVD and stroke. More people die from CVD than from cancer, chronic obstructive pulmonary diseases, diabetes, and AIDS combined.<sup>2,3</sup> Many of these illnesses can be linked to poor diet and physical inactivity.

### **Selected Healthy People 2010 Goals** – Cardiovascular Health (CVH) Program.<sup>4</sup>

#### **Coronary heart disease (CHD):**

- ◆ Reduce coronary heart disease deaths by 20 percent from 208 per 100,000 to 166.
- ◆ Reduce hospitalization of older adults with heart failure as the principal diagnosis (target varies with age group).

#### **Stroke:**

- ◆ Reduce stroke deaths by 20 percent from 60 per 100,000 to 48.

#### **High blood pressure:**

### **What's New**

- ◆ The Dietary Approach to Stop Hypertension (DASH) Eating Plan is one of only two eating patterns selected to be included in the Dietary Guidelines for Americans 2005. The DASH plan demonstrates effectiveness both in reducing LDL cholesterol, as well as hypertension and may also improve bone health.<sup>5, 6, 7</sup>
- ◆ A recent Journal of Hypertension report indicates that home-based blood pressure monitoring is “interchangeable” with the traditional ambulatory method to detect high blood pressure. The results concluded that home monitoring is an overall efficient method to monitor blood pressure because, of its low cost and convenience for repeated measurements, whereas, infrequent ambulatory measures might not reveal a problem.<sup>8</sup>

- ◆ Reduce the proportion of adults with high blood pressure from 28 percent to 16 percent.
- ◆ Increase the proportion of adults whose high blood pressure is under control from 18 percent to 50 percent.
- ◆ Increase the proportion of adults who are taking action for their high blood pressure by losing weight, increasing physical activity, and/or reducing sodium intake to help control their blood pressure from 72 percent to 95 percent.
- ◆ Increase the proportion of adults who have had their blood pressure measured within the preceding two years and can state whether their blood pressure was normal or high from 90 to 95 percent.

**High cholesterol:**

- ◆ Reduce the mean total blood cholesterol from 206 mg/dL to 199 mg/dL.
- ◆ Reduce the proportion of adults with high total blood cholesterol levels from 21 percent to 17 percent.
- ◆ Increase the proportion of adults who have had their blood cholesterol checked within the preceding five years from 68 percent to 80 percent.

The American Heart Association, the leading advocacy organization for CVD, has set a goal of reducing CHD, stroke, and risk by 25 percent by the year 2010.<sup>9</sup>

---

Indications of a heart attack include sweating, anxiety, and chest pains.



**Warning Signs of a Heart Attack:<sup>10</sup>**

- ♥ While some heart attacks are sudden and intense most are slow and involve mild discomfort.
- ♥ Chest discomfort (pressure) lasting for a few minutes that may come and go.
- ♥ Discomfort in the upper body – shoulders, neck, and arms.
- ♥ Shortness of breath, nausea, and sudden cold sweat.

AHA, 2005c (<http://www.americanheart.org>)

**Definition**

Cardiovascular disease includes a number of diseases of the heart and blood vessels: coronary heart disease (CHD) is also known as coronary artery disease (CAD), ischemic heart disease, or just heart disease. Coronary heart disease leads to angina pectoris (chest pain) and heart attack and can, over time, contribute to congestive heart failure, a condition in which the heart can no longer pump blood effectively to the other parts of the body, and lead to arrhythmias (abnormal heart rhythms).<sup>11</sup> Another type of cardiovascular diseases include cerebrovascular disease (stroke), transient ischemic attacks (TIAs – “mini strokes”) and their precursor, hypertension (HTN), more commonly known as high blood pressure (HBP). CHD and stroke are the two major causes of CVD deaths. In CHD, a condition called atherosclerosis occurs, in which fatty deposits (cholesterol) build up on the interior walls of the arteries that lead to the heart.<sup>12</sup> See the following link for more information: [http://www.nhlbi.nih.gov/health/dci/Diseases/Atherosclerosis/Atherosclerosis\\_WhatIs.html](http://www.nhlbi.nih.gov/health/dci/Diseases/Atherosclerosis/Atherosclerosis_WhatIs.html). This build up over time eventually reduces blood flow and oxygen to the heart, in turn impairing the heart’s ability to supply blood to the rest of the body.<sup>13</sup> In cerebrovascular disease the blood vessels leading to the brain are affected and the blood supply to the brain is interrupted.<sup>14</sup>

### **Burden**

In 2005, the American Heart Association estimated the cost of cardiovascular disease and stroke in the United States to be \$393.5 billion. This includes the direct costs of hospitals/nursing homes, medical professionals, drugs, and medical durables, as well as the indirect costs of lost productivity, morbidity, and mortality.<sup>3</sup> This represents an increase of over 20 percent since the year 2000 (\$326.6 billion). In California there were \$5.3 billion in lost productivity due to CVD mortality and over \$1 billion due to cerebrovascular disease in 1991.<sup>14</sup> By comparison, \$190 billion dollars were the associated costs of all cancers in the United States.<sup>3</sup> Reducing CVD risk factors could significantly lower health care costs. Even if CVD rates remain stable, the financial costs to society will continue to escalate from the increasing cost of treating CVD.<sup>16</sup>

### **Incidence and Prevalence**

Over 70 million Americans or nearly 25 percent of the U.S. population have one or more types of CVD.<sup>3</sup> In the United States, about 13 million people have been diagnosed with CHD, seven million people have had heart failure, and four million have cerebrovascular disease.<sup>3,4</sup> Like the death rate, the prevalence of chronic CVD increases with age, is more prevalent in men than in women, and occurs more among African-Americans than among white Americans.

Projected incidence and prevalence for CVD is not easily calculated. Although the rate of heart disease has been decreasing, cardiovascular diseases are still more common in older adults, and the population is growing older.

### **Statistics:**

*National:*

In 2002, over 927,000 people died in the United States due to CVD. On average, one death due to CVD occurs every 34 seconds in the United States--2600 deaths a day.<sup>1, 3</sup> It is the leading cause of premature, permanent disability including stroke in the United States.<sup>1</sup> Annually, 700,000 strokes occur in the United States, of which nearly one quarter (163,000) ends in death.<sup>17</sup>

*California:*

From 2000-2002 an average of nearly 70,000 people died from CVD in California.<sup>18</sup> The total deaths from stroke in California fell 2.9 percent from 18,078 in 2001 to 17,551 (2002) but, accounted for 88.2 percent of all deaths in people aged 65 and older.<sup>18</sup>

Age and Gender Differences:

- About 84 percent of cardiovascular disease deaths in the U.S. occur in people age 65 and older.<sup>3</sup>
- About 150,000 Americans under age 65 are killed by CVD.<sup>3</sup>
- Since 1984, the number of CVD deaths for females has exceeded those for males.<sup>19</sup>
- In 2002, CVD caused the deaths of 493,623 females compared with 433,825 males. Females represent 53.2 percent of deaths from CVD.<sup>3</sup>
- Post-menopausal women are two-to-three times more likely to have CHD than women of the same age who are pre-menopausal.<sup>3</sup>
- On average, men experience their first heart attack five years earlier in life (65.8 years old) than women (70.4 years).<sup>3</sup>
- Since the 1990's, blood pressure in children has increased, much of which can be attributed to their increase in weight and their decrease in physical activity placing them at risk for developing hypertension and an adult form of diabetes.<sup>20, 21</sup>
- In California, six times as many people 65 years and older report having been diagnosed with heart disease than do adults under age 65. Three times more who are over 65 have been diagnosed with high blood pressure, but the ratio is reversed for the percentage that have been diagnosed and are taking medication to reduce their blood pressure.<sup>22</sup>
- Although equally likely to have high blood pressure, California men are significantly less likely than women to be taking medication to control it.<sup>22</sup>

Racial/Ethnic Disparities:

Racial/ethnic disparities exist for many aspects of CVD, with African-Americans being at particularly high risk compared to all other racial/ethnic groups. Compared to White Americans, African Americans living in the United States in 2002:

- Have an age-adjusted heart disease death rate that is 47 percent higher than the national average (170.8) for males and equal to for females.<sup>3</sup>
- Have a CHD death rate of 250.6 (men) and 169.7 (women) per 100,000 compared to 220.5 and 131.2 respectively for the population as a whole.<sup>3</sup>

- Who are aged 65 - 74 are twice as likely to be hospitalized with heart failure (20.0 per 1000 vs. 10.1 per 1000).<sup>3</sup>
- Have among the highest prevalence of hypertension in the world.<sup>3</sup>
- Will develop much higher blood pressure and at an earlier age.<sup>3</sup>
- Who have CHD are more likely to be less educated, more over weight or obese, physically inactive, have diabetes, and live in the southeastern U.S.<sup>3</sup>
- Have a higher incidence of stroke, more severe strokes, and higher stroke mortality.<sup>33</sup>
- Are almost twice (1.8) as likely to die from a stroke.<sup>17</sup> In California, the disparity is somewhat less — 2002 age adjusted death rates due to stroke were 44 percent higher among African-Americans.<sup>24</sup>

East Indian people (Indian and Pakistani decent) like African Americans have significantly greater cardiovascular morbidity and mortality than Whites.<sup>26</sup>

In 1999, Latinos had a reported death rate of 138.4 per 100,000 from coronary heart disease and 40 per 100,000 from stroke.<sup>3</sup>

Mexican-Americans in comparison to Black and White Americans have the lowest prevalence of hypertension (25.1 percent) however, they are the group least likely to be aware of their condition or have it under control (49.8 percent and 17.3 percent) respectively.<sup>27</sup>

*Racial/ethnic reduced risk:*

Asian Americans/Pacific Islanders are the least likely to die of coronary heart disease compared to White and African Americans at 115.5 per 100,000 and stroke at 52 per 100,000. Native Americans/Alaskan Natives also have a lower death rate from coronary heart disease at 123.9 per 100,000 and 40 per 100,000 for stroke.<sup>2</sup>

Education and Income-Related Disparities:

Death rate information is not available by educational level and income status; however, the self-reported California Health Information Survey Data presented in Table 1 suggests that there are disparities in related factors. For example, both stroke and high blood pressure decrease in a linear fashion with increasing education, and taking medication to control high blood pressure increases. The relationship is less clear cut for heart disease. Both those with a high school degree, as well as those with at least a bachelor's degree reported lower rates of heart disease than those with less than a high school degree or some post high school education without a bachelor's degree. However, of those diagnosed with heart disease or stroke, reported high cholesterol was reported less frequently in more educated Californians.

Of those who have had heart disease or a stroke, high cholesterol is seen least frequently in the two highest income groups by Federal Poverty Level (FPL) – encompassing those reporting a household income at or above 200 percent FPL. Not

taking medication to control high blood pressure is reported by more respondents indicating household incomes below FPL than by those at or above 200 percent FPL.<sup>28</sup>

**Table 1: Reported Prevalence of Selected Cardiovascular Diseases and/or Risk Factors in Adults by Selected Characteristics 2003<sup>1</sup> California Health Interview Survey (CHIS)**

Selected Characteristics	Ever Diagnosed - Any Kind of Heart Disease	High Cholesterol <sup>2</sup>	Ever Had a Stroke <sup>3</sup>	Ever Diagnosed with High Blood Pressure	Not Currently Taking Medicine for High Blood Pressure <sup>4</sup>
<b>Total</b>	<b>1,763,000 (6.9%)</b>	<b>1,868,000 (32.2%)</b>	<b>333,000 (8.8%)</b>	<b>6,012,000 (23.5%)</b>	<b>1,941,000 (32.3%)</b>
<b>Gender</b>					
Male	881,000 (7.0%)	907,000 (32.2%)	137,000 (8.4%)	2,884,000 (23.0%)	1,001,000 (34.7%)
Female	882,000 (6.8%)	961,000 (32.1%)	196,000 (9.2%)	3,128,000 (24.0%)	940,000 (30.1%)
<b>Age</b>					
18-64	847,000 (3.9%)	1,278,000 (34.4%)	--	3,856,000 (17.7%)	1,707,000 (44.3%)
65+	916,000 (24.3%)	590,000 (28.2%)	333,000 (8.8%)	2,156,000 (57.2%)	234,000 (10.9%)
<b>Race/Ethnicity<sup>5</sup></b>					
White	1,162,000 (8.8%)	1,123,000 (31.8%)	242,000 (9.2%)	3,393,000 (25.7%)	960,000 (28.3%)
Native American-Alaska Native	25,000 (8.3%)	23,000 (31.6%)	Sample too small	80,000 (26.7%)	29,000 (36.6%)
African-American	110,000 (6.9%)	149,000 (30.0%)	21,000 (10.4%)	544,000 (33.9%)	137,000 (25.1%)
Asian	144,000 (4.8%)	212,000 (36.0%)	31,000 (7.4%)	665,000 (22.1%)	179,000 (26.9%)
Latino/Hispanic Origin	270,000 (4.1%)	308,000 (32.3%)	29,000 (7.4%)	1,149,000 (17.2%)	565,000 (49.2%)
<b>Education</b>					
Less than high school	441,000 (8.5%)	462,000 (34.7%)	95,000 (11.7%)	1,366,000 (26.3%)	480,000 (36.5%)
High school	404,000 (6.6%)	439,000 (33.9%)	88,000 (9.7%)	1,483,000 (24.4%)	495,000 (33.4%)
Post high school/AA degree	461,000 (7.5%)	506,000 (32.0%)	79,000 (9.0%)	1,560,000 (24.2%)	490,000 (31.6%)
Bachelor's/post-grad degree	457,000 (5.9%)	460,000 (29.1%)	71,000 (6.9%)	1,605,000 (20.5%)	476,000 (29.9%)
<b>Federal Poverty Level Group</b>					
0 – 99%	262,000 (6.8%)	302,000 (34.2%)	43,000 (9.3%)	854,000 (22.2%)	320,000 (37.5%)
100 – 199%	396,000 (8.2%)	433,000 (34.5%)	106,000 (12.1%)	1,243,000 (25.7%)	421,000 (33.9%)
200 – 299%	276,000 (7.7%)	264,000 (31.1%)	59,000 (8.6%)	958,000 (26.7%)	306,000 (32.0%)
300% and above	829,000 (6.2%)	869,000 (30.8%)	125,000 (7.2%)	2,957,000 (22.2%)	894,000 (30.2%)
<b>Health Insurance Status</b>					
Currently Insured	1,632,000 (7.6%)	1,698,000 (32.0%)	332,000 (8.9%)	5,417,000 (25.4%)	1,558,000 (28.8%)

Currently Not Insured	130,000 (3.1%)	170,000 (33.9%)	1,000 (4.5%)	594,000 (14.0%)	383,000 (64.5%)
-----------------------	-------------------	--------------------	-----------------	--------------------	--------------------

<sup>1</sup> All findings are from the 2003 CHIS except high cholesterol question, numbers reported in thousands.

<sup>2</sup> Cholesterol asked only of respondents told by doctor they had heart disease or high blood pressure.

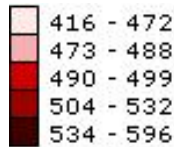
<sup>3</sup> Stroke question asked only of Californians age 65 and older.

<sup>4</sup> Medication question asked only of respondents had been told by a doctor they had high blood pressure.

<sup>5</sup> Race/ethnicity defined by UCLA Center for Health Policy Research as group the respondent "most identifies with." Excludes other single races and > one race.

**Figure 1: California Total Population Ages 35+, Heart Disease Death Rates 1996-2000<sup>29</sup>**

Age-adjusted  
Average Annual  
Deaths per 100,000



State Rate **504**  
National Rate  
**536**

Source: CDC, 2005.



**Trends/Contributing Factors**

The annual incidence of deaths attributed to cardiovascular diseases declined substantially among U.S. adults during 1980-2000 from 350 per 100,000 in 1980 to 196 in 2000.<sup>30</sup> Rates of decline varied substantially, and were related to socioeconomic status and concurrent health conditions. Rates declined most steeply among economically advantaged persons, increasing the gap between people of low socioeconomic status and others in terms of mortality, morbidity, and risk factors for heart disease and stroke.<sup>31</sup> However, the decline was not as substantial for those adults with diabetes. Adults with diabetes are more likely to report having a history of CVD than adults without diabetes.<sup>30</sup> The increasing prevalence of diabetes poses a major and growing threat to the U.S population as the proportion of heart disease deaths due to diabetes is projected to increase from 21 to 29 percent of the total over the first quarter of the 21st century.<sup>4</sup>

The factors contributing to the downward trend include both personally modifiable risk factors, as well as advances in medical care:

- a substantial decline in cigarette smoking;
- a decrease in average blood cholesterol;
- reduced consumption of saturated fat, percentage of calories from fat, and dietary cholesterol;

- a reduction in average blood pressure and an increase in the percentage of people who have high blood pressure that is being treated and controlled;
- and improvements in diagnosis and treatment of heart disease, cholesterol, and stroke.<sup>31</sup>

	<b>At Risk</b>
<b>* Elevated LDL-cholesterol</b>	
• <b>Without CHD and fewer than 2 other risk factors</b>	≥ 160 mg/dL
• <b>Without CHD and 2 or more risk factors</b>	≥ 130 mg/dL
• <b>With known CHD</b>	≥ 100 mg/dL
<b>Elevated total cholesterol</b>	≥ 240 mg/dL 200 - 239 mg/dL if HDL <40 mg/dL or 2 or more non-lipid risk factors
<b>* Low HDL-cholesterol</b>	< 40 mg/dL
<b>* Hypertension</b>	Systolic ≥ 140 mm Hg Diastolic ≥ 90 mm Hg Or on anti-HTN medication
<b>Abdominal obesity</b>	Men: Waist > 40 inches Women: Waist >35 inches
<b>Cigarette smoking</b>	Current smoker
<b>Homocysteine level in blood</b>	>10 micromoles/liter
<b>Diet high in saturated fat and/or cholesterol</b>	> 10% of calories as saturated + trans fat > 300 mg dietary cholesterol/day
<b>Diets low in fruit and vegetables</b>	< 5 daily servings (2 ½ cups) of fruit and vegetables
<b>Diets high in sodium</b>	> 2300 mg/day (direct, progressive relationship w. HTN)
<b>Physical inactivity</b>	< 30 minutes of physical activity daily

\* Whole-body obesity raises risk for this factor  
Sources: National Cholesterol Education Program. *Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III), Final Report*, 2002; Kris-Etherton P and Burns JH. *Cardiovascular Nutrition: Strategies and Tools for Disease Management and Prevention*, 1998; American Heart Association: Healthy Lifestyle web pages; <http://www.americanheart.org/presenter.jhtml?identifier=1200000>, 2005e.

Some risk factors are not modifiable: age (men  $\geq$  45 years; women  $\geq$  55 years) and family history of early CHD are two of them. One major modifiable risk factor for CHD that is strongly influenced by diet is high blood cholesterol, in particular, elevated levels of low-density lipoprotein cholesterol (LDL).<sup>35</sup> More than 50 million adults in the United States have high blood cholesterol that requires medical treatment.<sup>36</sup> In turn, blood cholesterol is negatively influenced by diets high in fat, especially saturated fat and *trans* fatty acids, and, to some extent, dietary cholesterol.<sup>37, 38</sup> Elevated LDL cholesterol is also associated with low intake of fruits and vegetables.<sup>39</sup> An additional risk factor for CHD is homocysteine, a naturally produced amino acid that, when elevated, can cause narrowing and hardening of arteries and blood clots (atherosclerosis) which reduces the blood flow/supply to the heart and can cause heart attack and strokes. Consumption of foods high in folic acid including green, leafy vegetables and cereals fortified with folic acid, and vitamins B12, and B6 can lower blood homocysteine levels and reduce risk of heart attack.<sup>40, 41</sup> The DASH diet, with its strong emphasis on fruits and vegetables, has proven effective at reducing homocysteine levels.<sup>42</sup>

#### Contributing Health Conditions and Lifestyle Behaviors:

Several diseases themselves increase risk for CHD. High blood pressure is a major risk factor for CHD, stroke, and heart failure. About 65 million people in the United States have high blood pressure. Diabetes is also a major risk factor. In 2002, there were almost 14 million diagnosed cases of diabetes in the U.S. In fact, more than 65 percent of people with diabetes die annually from heart disease or stroke.<sup>43</sup> Excess weight also increases the risk for both high blood pressure and diabetes, and abdominal obesity directly increases risk for overall CVD. Currently, in the United States 65 percent of adults 20 years and older, and 16 percent of children and teens aged 6-19 years old are considered overweight or obese.<sup>44</sup> In 2003, 5.2 million (20.4 percent) adult Californians alone were classified through self-report as obese; another 9 million (35.2 percent) were overweight.<sup>45</sup> It is estimated that, in 2004, more than 28 percent of California children were overweight or at risk for overweight.<sup>46</sup> However, despite, increases in obesity, over the 40 years leading up to 2000, cardiovascular risk factors, such as high cholesterol and high blood pressure, decreased substantially over the same time period, both in overweight/obese and in lean persons.<sup>47</sup>

Physical *inactivity* is another major risk factor of cardiovascular disease for both adults and children. In 2003, 22.3 percent of adult Californians reported no physical activity, while 53.3 percent did not take part in *regular* physical activity. This compares with 23.1 percent for no physical activity and 52.8 percent for no regular physical activity nationwide.<sup>48</sup> The relative risk of coronary heart disease associated with physical inactivity ranges from 1.5 to 2.4, a similar risk observed for high cholesterol, high blood pressure and smoking.<sup>49, 50, 51</sup>

However, lack of physical activity is not just a problem for adults but is slowly and steadily affecting the health of children living in the U.S. In 2002, nearly 23 percent of children nationwide report getting no free-time physical activity.<sup>52</sup> As physical education classes and programs are cut from the schools and children spend more of their leisure time in front of the television or playing video games their sedentary lifestyle is having a

negative impact on their health. In a recent article, the American Journal of Medicine (2005) reported that more than one in three American adolescents are physically unfit and have many risk factors for heart disease. Of 3,100 adolescents who performed treadmill tests, 34 percent were revealed to be in poor physical condition. The percentage was conservative as some could not even perform the test since they were at too high of a risk for heart attack. This figure projected to the entire U.S. population means that as many as 7.5 million adolescents may be at risk for CVD, diabetes, and other related illnesses due to poor physical condition. This extreme amount of physical inactivity contributes to about 250,000 (12 percent) deaths per year in the United States.<sup>34</sup>

Physical *activity* on the other hand has a protective effect and reduces the risk of dying from coronary heart disease and of developing high blood pressure, high blood lipid abnormalities, diabetes, and other chronic illnesses.<sup>16, 34</sup> In 2003, 28.3 percent reported 20 minutes or more of vigorous physical activity at least three days a week, a little above the national average of 26.3 percent.<sup>48</sup>

### Warning Signs of a Stroke:<sup>10</sup>

- ◆ Sudden numbness in face, arm, leg, or one side of body
- ◆ Sudden confusion, trouble speaking, or understanding
- ◆ Sudden difficulty seeing out of one or both eyes
- ◆ Sudden loss of balance, walking, or standing
- ◆ Sudden and severe headache with no known cause

AHA. 2005c (<http://www.americanheart.org>)

## Barriers to Implementation/Myths

### Myths

**M High cholesterol affects more men than women.**

F No, beginning at age 45 a higher portion of women will have total blood cholesterol levels of 200 mg/dL or greater.<sup>53</sup>

**M More women suffer and die from breast cancer than from heart disease.**

F One in 2.5 women will die of heart disease or stroke, compared with one in 30 from breast cancer. **Go Red** is a new national campaign created by the American Heart Association to raise women's awareness of the severity of heart disease and that it is the **number one** killer of women in the United States.<sup>54</sup>

**M The majority of Americans with high blood pressure know they have it and have it under control.**

F Of those with high blood pressure 30%, are not aware of their condition and only 34% are on medication to control their hypertension.<sup>53, 55</sup>

**M Cardiovascular disease only affects a person's heart health.**

F Cardiovascular disease affects more than an individual's heart but, is also linked to their mental well-being. Recent studies reported that prevalence of psychological distress is common among patients with heart failure (10%), heart attack (6.4%) and CHD (4.1%) whereas, it is only 2.8% for non-diseased patients.

**Myths cont'd****M Heart attacks are more common in people over 65 years old**

F Almost half of all reported heart attacks are in people younger than 65.<sup>3</sup>

**M Testing and treatment of high cholesterol in the elderly is not effective in reducing illness or preventing heart disease.**

F An extensive review of the literature found risk reduction activities effective for the elderly to prevent those with CHD from having a heart attack, and to prevent others from developing CHD.<sup>57</sup>

**M Children do not suffer from cardiovascular disease.**

F CVD is the second cause of death next to accidents for children under age 15. CVD in children is mostly due to congenital (birth) defects that claim about 2,200 lives a year. However, as more children are becoming overweight they are developing preventable risk factors like high blood pressure and diabetes, factors that contribute to CVD.<sup>3, 20</sup> Twenty-five percent of a random sample of 14 and 15 year-old teens in Texas demonstrated two or more CVD risk factors.<sup>58</sup>

**M Heart disease and type 2 diabetes are two entirely different entities**

F Both medical conditions are highly related, sharing common origins and pathways, such as insulin resistance and chronic low-grade inflammation. These contribute to blood vessel dysfunction and atherosclerosis and show themselves as CVD.

**M To be protective against cardiovascular disease, exercise must be intense and completed over a continuous period.**

F Thirty minutes of activity accumulated most days are recommended for chronic disease risk reduction. Moderate-intensity physical activities include brisk walking and doing housework and gardening in a more energetic manner, among others.

**M Exercise testing is important only for elderly people or for people who are having CVD symptoms such as chest pain.**

F Low fitness levels carry increased risk for CVD events. For this reason doctors should consider exercise as part of the regular physical exam for women over age 50 and men over age 40, especially if they have more than two other typical CVD risk factors.

**M All diets that contain more than 30 percent fat raise risk for heart disease.**

F Diets with 35 percent of calories from fat can improve cholesterol patterns if at least 15 percent is monounsaturated fat, no more than 8 percent is saturated, and total calories are suitable for reaching and maintaining a healthy weight.<sup>59</sup>

## **Barriers**

Many of the same barriers that apply to obesity such as, diet and physical inactivity are the same barriers that prevent individuals from achieving good cardiovascular health.

Cardiovascular diseases are very influenced by diet.<sup>32, 33</sup> Diets high in salt/sodium intake make individuals more prone to developing hypertension. Dietary Guidelines for Americans 2005 recommends that adults and children consume less than 2,300 mg of sodium a day, about a teaspoon of salt.<sup>60</sup> However, for many U.S. adults, salt intake far exceeds their daily allowance, placing them at risk for developing high blood pressure or exacerbating existing high blood pressure. Diets high in fat and cholesterol consumption are also greatly associated with CVD. Consumption of too many foods rich in saturated fat such as meat, eggs, and dairy products have been shown to increase “bad” or LDL cholesterol levels and total cholesterol.<sup>61</sup> Poor dietary habits can be attributed, to a variety of factors:

- An abundance of high calorie, high fat, high sodium, and sugar foods, such as snack foods and convenience foods, along with their easy accessibility, coupled with substantial advertising to promote the consumption of these items;
- Extended work hours for adults, making it more difficult to prepare and consume healthy meals and fresh foods at home.<sup>62</sup>
- Increased eating out, especially at fast food restaurants that encourage excess consumption through large portions or "super-sizing" meals.<sup>63</sup>

In addition to poor diet, lack of physical activity exacerbates and increases an individual's risk for developing cardiovascular diseases. Factors that increase the likelihood of this include:

- Increased time spent by children and adults in sedentary pursuits, such as watching television, playing video games, and computer use.<sup>64</sup>
- Neighborhoods that are either not safe for outdoor recreation, or are designed so that walking as a means of destination transportation is difficult or impossible.
- Sedentary jobs with extended work hours for adults, making it more difficult to find time for recreational physical activity.<sup>64</sup>

**See chapters on Body Weight and Physical Activity for more Barriers.**

## **Common Concerns/Strategies**

A healthy diet, coupled with increased physical activity, is the major non-pharmaceutical means of preventing heart diseases and stroke. Although not part of a food guide, efforts to prevent people from beginning the habit of smoking and reinforcing both individual and population-based efforts to help smokers quit must also be included in strategies to reduce CVD.

At the Individual Level:

Overall, dietary change and increased physical activity are the cornerstones to reducing the risk of CVD. One primary role of health professionals is to help people make lifestyle modifications that are individualized and sustainable, such as identifying an acceptable eating plan that is palatable yet nutritious, and physical activities that are enjoyable and convenient to do. Initial steps to a more heart healthy lifestyle can be taken both during routine health care and in the public health setting. Both individual practitioners and group or community based efforts can be used to screen individuals for risk factors and educate them about what people can do to reduce their risk.

One highly effective method for reducing cardiovascular disease is through the consumption of healthier foods such as fruits and vegetables, and reducing consumption of salt, sugar, and fat intake. The DASH diet which is rich in fruit and vegetables has proven to be effective in lowering blood pressure, particularly for African Americans.<sup>65, 66</sup> Diets high in fruit and vegetable intake have also shown to be effective in stemming rising blood pressure in children.<sup>67</sup>

For children, primary prevention efforts, in particular, school, after-school, and family-based interventions that encourage children to develop positive eating and physical activity habits, have shown to be the most potentially successful in reducing the risk of CVD and its long-term health effects.<sup>68</sup>

For low-income women age 40-64, participation in the California WISEWOMAN project enables them to receive testing for cholesterol and blood pressure, as well as lifestyle education at no or low cost.<sup>69</sup> Education programs like this can help women adopt healthy eating patterns, encourage women to be more physically active, and provide support for stress reduction and smoking cessation.

Sometimes diet and physical activity may not be enough, either as primary or secondary prevention strategies. While diet and physical activity can be highly effective in preventing and even treating CVD and its risk factors, if intractable high LDL-cholesterol is a problem, drug therapy is the next step. Drug therapy can add synergistically to improvements made in lifestyle behaviors.

Population-based:

For adults, worksite and community-based strategies can provide an environment supportive of lifestyle change. Widespread availability of competitively-priced meals and snacks in the workplace cafeteria, fast food restaurants, and vending machines provide incentives for choosing healthier food at work. Flex time, low cost community center or school-based gyms, and safer neighborhoods promote more walkable communities and increased physical activity. At a policy level, health claims for foods that reduce risk of heart disease should be maintained and expanded as science provides new evidence.

For children, systems, environmental, and policy changes in school and after-school care institutions can reinforce individual nutrition and physical activity education by

limiting availability of less desirable choices and providing easy access to healthy foods and physical activity opportunities.

See also the chapters on Body Weight and Physical Activity for more Strategies.

**Table 3: Dietary Constituents Positively Associated With Risk Reduction for CVD\***

	Sources and suggested amounts
<b>Omega-3 fatty acids</b>	Fatty fish - salmon, sardines, mackerel; Also tofu, soy, canola, and flaxseed oils, and nuts; 900 mg/day; two or more fish meals/week. <sup>32</sup> Fish oil supplements for patients with severely elevated serum triglycerides. Fish eaten four times/week reduces cholesterol by an average of 14 percent. <sup>70</sup> Each 20 gram/day increase in fish consumption was related to a 7 percent lower risk of CHD mortality. <sup>71</sup>
<b>Monounsaturated fat</b>	Canola, olive, high oleic safflower, and sunflower oils, nuts – up to 20% of daily calories. <sup>32</sup>
<b>Soluble fiber</b>	Oats, oat bran, rice bran, barley, apples, oranges, prunes, carrots, legumes; 10-25 gm/day. <sup>32</sup>
<b>Antioxidants - Carotenoids and Beta Carotene</b>	Dark green and deep orange vegetables, mangoes and apricots; eat at least 5 cups of high beta carotene foods each week. <sup>60,72</sup>
<b>Folic acid with Vitamin B<sub>6</sub> and B<sub>12</sub></b>	Dark green leafy vegetables, oranges and orange juice, fortified whole grains, legumes; 400 mg/day from food; 400 – 1,000 µg/day. <sup>32</sup>
<b>Potassium</b>	Fruits and vegetables, especially leafy green vegetables, fruit from vines, and root vegetables; meat, milk, and cereal products are other sources of potassium. The recommended intake of potassium for Recommended intakes for potassium for children 1 to 3 years of age is 3,000 mg/day, 4 to 8 years of age is 3,800 mg/day, 9 to 13 years of age is 4,500 mg/day, and adolescents and adults is 4,700 mg/day. <sup>60</sup>
<b>Alcohol</b>	Especially, red wine; limit to moderate amounts - no more than 2 drinks/day for men, 1 drink a day for women; do not start drinking if a nondrinker. <sup>32,73</sup>
<b>Soy protein</b>	Tofu, tempeh, textured vegetable protein, soy burgers, soy "milk"; 25 -50 mg soy protein/day can reduce total cholesterol by 4-8%, with higher effects in people with high cholesterol. <sup>74</sup>
<b>Plant sterol esters or Plant stanol esters</b>	Found in very small amounts naturally in plants; for CVD risk reduction, prepared spreads, e.g., margarine and salad dressing, for both; also snack bars and plant stanol ester dietary supplements for stanols. Diets low in saturated fat and cholesterol that include at least 1.3 grams of plant sterol esters or 3.4 grams of plant stanol esters, consumed in 2 meals with other foods, may reduce the risk of heart disease. <sup>75</sup>

\* See also Kris-Etherton, 2002 for further information.<sup>76</sup>

At present, heart/stroke health-related label claims are approved for fruits, vegetables, and grains containing at least 0.6 gm of soluble fiber/serving; foods containing at least 6.25 gm soy protein/serving; foods containing at least 0.65 g plant sterol esters or 1.7 g plant stanol esters/serving; low saturated fat, low cholesterol foods; low sodium foods, and foods that are at least 51% whole grain by weight.<sup>77</sup>

**Rx: Clinical Implications****Table 4: Diets for the Prevention and Treatment of Cardiovascular Diseases\***

<b>Diet</b>	<b>Used for</b>	<b>Description</b>
<b>Step I</b>	A starting point diet for the general public to reduce CVD risk factors	About 55% of energy from carbohydrate, 15% from protein and $\leq 30\%$ from fat; limit saturated fat to 8-10%, polyunsaturated fat to no more than 10%, and monounsaturated fat to no more than 15%; cholesterol $< 300$ mg/day; 5 or more servings of fruits/vegetables a day; 25-30 grams of fiber/day; less than 2300 mg sodium for people with hypertension. <sup>32</sup>
<b>DASH</b>	The general public and people with high blood pressure	Food-based; 7-8 grain products, 4-5 vegetables, 4-5 fruits, 2-3 low fat dairy, 2 or fewer meats/poultry/fish a day and 4-5 servings of nuts, seeds, or legumes a week; low saturated and total fat; high dietary fiber, potassium, calcium, and magnesium; moderately high in protein. <sup>60</sup>
<b>Therapeutic Lifestyle Changes</b>	For people at high risk or with known heart disease: -- High LDL-cholesterol or other lipid problems -- CHD or other CVD -- Diabetes mellitus, insulin resistance, or metabolic syndrome	Total fat from 25-35% with the higher amount recommended for persons with metabolic syndrome or diabetes; limit saturated fat to less than 7% of calories, polyunsaturated fat up to 10%, and monounsaturated fat up to 20%; less than 200 mg cholesterol/day; carbohydrate, mainly from foods rich in complex carbohydrates (fruits, vegetables, whole grains) to equal 50-60% of total calories; about 15% protein; total calories to maintain desirable body weight and prevent weight gain <sup>32</sup>
<b>Very low fat, high carbohydrate</b>	Patients with diagnosed CVD and high-risk patients	At least 65% of energy from carbohydrates; total fat about 10%; saturated fat $< 6\%$ of calories; vegetarian diet with emphasis on low fat grains, legumes, vegetables, and fruits. Adherence to the diet, plus aerobic exercise, stress management training, smoking cessation and group psychosocial support for 5 years showed reduced atherosclerosis while patients on standard CVD treatment increased. <sup>78</sup>
<b>High mono-unsaturated fat (MUFA)</b>	An alternative for those who are not high risk and do not want to follow a low fat diet	Limit fat to 35% of calories of which 15% are from high-MUFA foods; limit saturated fats to 9% or less. Good sources: avocado, olives, nuts, peanut butter, tahini paste; olive, canola, and peanut oils. <sup>59</sup>
<b>Mediterranean</b>		A variation of the high MUFA diet - olive oil is the primary source of fat; bread, pasta, rice, grains, potatoes, fruits, vegetables, beans, nuts and seeds make up the basic diet; saturated fat $\leq 8\%$ ; total fat 25-35%; red meat and butter seldom eaten or in very small amounts; cheese, yogurt, fish, and poultry in low to moderate amounts; zero to four eggs/week; sweets a few times a week; wine in moderation with meals. <sup>79</sup>
<b>Sodium-restricted</b>	People with high blood pressure, African Americans, older adults	Sodium is limited to 1,500 mg/day or less; prepare most food at home or inquire carefully when eating out; meet a 4,700 mg/day potassium recommendation with food; may be part of any of the other diets. <sup>60</sup>
<b>The Polymeal – based on modeling, not actually tested</b>	The general population	Food-based, wine – 150 ml/day; fish – 114 g four times/week; dark chocolate – 100 g/day; fruit and vegetables – 400 g/day; garlic – 2.7 g/day; almonds – 68 g/day; in theory, this diet would reduce heart disease risk by up to 76%. <sup>80</sup>

\* For all diets, individualize calories to achieve and maintain a healthy body weight. See also Kris-Etherton, 2002 for further information.

### **At-a-Glance: American Heart Association's Dietary Recommendations for Children and Adolescents<sup>81</sup>**

Here is a summary of key American Heart Association dietary recommendations for preventing the development of cardiovascular disease from infancy and childhood.

#### **Start in infancy.**

- If possible, feed breast milk exclusively for the first four to six months and continue breastfeeding until one year of age.
- Delay introducing juice until at least six months of age and then use only 100 percent juice and limit to no more than 4-6 oz. per day. Only feed juice from a cup.
- Introduce healthy foods and continue offering if initially refused. It may take up to 10 tries for a baby to accept a new healthy food.
- Do not introduce foods without overall nutritional value simply to provide calories.
- Respond to cues the baby is full and do not overfeed. Do not force children to finish meals if not hungry.

#### **Serve foods with high nutrition.**

- Serve whole grain breads and cereals rather than refined grain products. Look for "whole grain" as the first ingredient on the food label and make at least half your grain servings whole-grain. Recommended grain intake ranges from 2 oz. per day for a one-year-old to 7 oz. per day for a 14-18 year old boy.<sup>1</sup>
- Serve a variety of fruits and vegetables daily, while limiting juice intake. Each meal should contain at least one fruit or vegetable. Children's recommended fruit intake ranges from 1 cup per day, between ages 1 and 3, to 2 cups for a 14-18 year old boy. Recommended vegetable intake ranges from ¼ cup a day at age one to 3 cups for a 14-18 year old boy.<sup>1</sup>
- Introduce and regularly serve fish as an entrée. Avoid commercially fried fish.
- Serve nonfat and low-fat dairy foods. From ages 1-8, children need 2 cups of milk or its equivalent each day. Children aged 9-18 need 3 cups.<sup>1</sup>
- Don't overfeed. Estimated calories needed by children range from 900 per day for a 1-year-old to 1800 for a 14-18-year-old girl and 2200 for a 14-18-year-old boy.
- Keep your child's activity level in mind. Be physically active for at least 60 minutes day.

#### **Reduce "empty" calories.**

- Make foods with high calories and little nutritional value an occasional discretionary item in a diet otherwise based on nutrition-rich foods.
- Reduce intake of sugar-sweetened beverages and foods.
- Reduce salt intake in processed and home-cooked foods.
- Choose cereals, breads, and prepared foods containing whole grains and higher fiber and with low salt and sugar.
- Reduce intake of high-calorie, nutrient poor foods such as salty snacks, ice cream, fried foods, cookies, and sweetened beverages.
- Limit snacking during sedentary activities or in response to boredom.
- Restrict the use of juice, soda, and sports drinks as snacks.

#### **Reduce saturated fats and trans fats.**

- Use nonfat (skim) or low-fat dairy products for all family members.
- Serve only lean cuts of meat.
- Limit fried foods.
- Use vegetable oils and soft margarines low in saturated fat and trans fatty acids instead of butter or other animal fats.
- Remove skin from poultry and visible fat from meat before eating.
- Use canola, soybean, corn, safflower, olive or other unsaturated oils in place of solid fats when preparing food.
- Limit sauces high in fat and calories, such as Alfredo and hollandaise, cream and cheese sauces.
- Serve more fish more frequently, especially oily fish that contains heart-healthy omega-3 fatty acids (such as salmon and tuna). Bake or broil fish instead of frying.

<sup>1</sup>MyPyramid.gov shows 3 oz. grain per day for a sedentary two year old, 8 oz. grain per day for a sedentary 14-18 year old boy, MyPyramid recommendations for 3 cups of milk for girls begins at age 11, and MyPyramid does not show recommendations for one year olds for any of the food groups.

- Serve some entrees based on legumes, beans, or tofu instead of meat.

**Foster a physically active lifestyle.**

- Encourage 60 minutes of moderate to vigorous play or physical activity daily.
- Limit time in front of the television or computer to no more than one to two hours per day.
- Don't put a television set in a child's bedroom.
- Provide opportunities for children to participate in sports.
- Encourage schools to provide opportunities for both competitive and noncompetitive sports.
- Participate in regular daily physical activity yourself and promote active family recreation.
- Encourage outdoor play whenever possible.

**Promote healthy eating behaviors for the whole family.**

- Have regular family meals.
- Parents should choose meal times, not children.
- Keep the kitchen stocked with a variety of nutrient-dense foods, such as fruits and vegetables, instead of high-calorie/nutrient poor foods such as salty snacks, ice cream, fried foods, cookies, and sweetened beverages.
- Serve portion sizes appropriate to a child's size and age (for example, a one year-old toddler only needs two ounces of grains a day).
- Parents need to show children how to be healthy by eating properly and making regular exercise important in their lives.

Source: AHA, 2005h; <http://www.americanheart.org/presenter.jhtml?identifier=4575>

## **Opportunities for Improvement**

The California Heart Disease and Stroke Prevention and Treatment Task Force was charged by the legislature to develop a Master Plan for heart disease and stroke for the State of California. During 2004, the California Heart Disease and Stroke Prevention Program held a series of public forums, bringing together local expert panelists and community members to address issues in five goal areas: 1) changes that need to be made to reduce CVD death and disability; 2) identification of what the general public and health care professionals need to learn about CVD; 3) what needs to happen in California schools, workplaces, and communities to prevent CVD; 4) what needs to change in the healthcare setting to improve prevention and treatment of CVD; 5) and how health disparities in CVD could be reduced.

Many recommendations were generated. The following are representative of draft recommendations relating to physical activity, schools, community planning/access, nutrition, and reducing health-related socioeconomic disparities. Note that policy recommendations for the primary and secondary prevention of cardiovascular disease through nutrition and physical activity substantially overlap those for obesity.

- Provide wellness programs and informational classes in the workplace, along with an environment that is conducive to supporting physical activity.
- Offer tax breaks and other legislative incentives for healthful activities at workplaces.

- 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.
- Adequately fund schools so they are not supporting themselves with revenues from unhealthy food and drink sources.
- Develop after school fitness programs for non-athletes and open schools for public use after school hours.
- Support local efforts to improve access to quality nutritious foods, including farmers' markets and community garden projects.
- Ensure that supermarkets and farmers' markets sell fresh fruit and vegetables in low-income communities.
- 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.
- Develop educational materials that are culturally, language, and reading-level appropriate. Make them widely available in multiple languages in a variety of community locations.
- Collect local data on heart disease and stroke similar to cancer registry data.

Additional recommendations on cardiovascular disease can be found at <http://www.dhs.ca.gov/ps/cdic/chdsp/Public%20Forum%20Report%2005-31-05.pdf>.<sup>82</sup>

## **Resources/Web Sites**

American Heart Association; the major voluntary organization for heart health research, professional and public education, and community service; publishes *Circulation*, *Hypertension* journals; (<http://www.americanheart.org>)

American Heart Association  
National Center  
7272 Greenville Avenue  
Dallas, Texas 75231  
(888) AHA-USA-1 or (214) 373-6300

Scientific reports on:

### Children

- Overweight in Children and Adolescents (*Circulation* 2005;111:1999:2012)
- Cardiovascular Health Promotion in Schools (*Circulation* 2004;110:2266)
- American Heart Association Guidelines for Primary Prevention of Atherosclerotic Cardiovascular Disease Beginning in Childhood (*Circulation* 2003;107:1562)

- Obesity, Insulin Resistance, Diabetes, and Cardiovascular Risk in Children (Circulation 2003;107:1448)
- Cardiovascular Health in Childhood (Circulation 2002;106:143)

### The General Public

- Circulation, special obesity-themed issue, April 19, 2005
- American Heart Association Guide for Improving Cardiovascular Health at the Community Level (Circulation 2003;107:645)
- Exercise and Physical Activity in the Prevention and Treatment of Atherosclerotic Cardiovascular Disease (Circulation 2003;107:3109)
- American Heart Association Guidelines for Primary Prevention of Cardiovascular Disease and Stroke: 2002 Update (Circulation 2002;106:388)
- American Heart Association Dietary Guidelines Revision 2000 (Circulation 2000;102:2284)
- Obesity and Heart Disease (Circulation 1997;96:3248)

### Programs:

- *The Cholesterol Low Down*  
A program that offers strategies for modifying diet and lifestyle to reduce the risk of heart disease and stroke associated with high cholesterol.  
<http://www.americanheart.org/cld>
- *Choose to Move*  
A free, 12-week behavior modification program to help women build more physical activity into their busy day.  
<http://www.americanheart.org/choosetomove>
- *Go Red For Women*  
A nationwide movement mobilizing women to reduce their risk of heart disease. Participants are encouraged to wear red on the first Friday in February to raise awareness about women's No.1 killer. Has printed materials and a Web site.  
<http://www.americanheart.org/goredforwomen>
- *Justmove.org*  
A feature of the American Heart Association Web site that focuses on fitness with a variety of personalized tools. <http://www.justmove.org>
- *Search Your Heart (also available in Spanish)*  
A faith-based heart disease and stroke educational program to help African Americans, Hispanics/Latinos, and Asians reduce their risk of heart disease and stroke. <http://www.americanheart.org/presenter.jhtml?identifier=3008521>

### Children's Education Programs:

- *HeartPower!*  
An educational program for students that promotes healthy choices for lifelong cardiovascular health.  
<http://www.americanheart.org/presenter.jhtml?identifier=3003357>
- *Hoops for Heart*  
An educational and fund-raising program in which middle school students perform basketball skills. Funds raised support research and educational programs to reduce disability and death from heart disease and stroke.  
<http://www.americanheart.org/presenter.jhtml?identifier=2360>
- *Jump Rope for Heart*  
An educational and fund-raising program for elementary school students that promotes physical activity. Funds raised support research and educational programs to reduce disability and death from heart disease and stroke.  
<http://www.americanheart.org/presenter.jhtml?identifier=2441>

Consumer Cookbooks:

American Heart Association Cookbooks and Health Information Books  
<http://www.americanheart.org/cookbooks>

Partner Program:

A preventive health alliance with the American Cancer Society and American Diabetes Association to educate consumers and medical professionals about the leading causes of death and disability in the United States: heart disease, cancer, stroke, and diabetes. Also discusses the four key steps to take to reduce risk: eat right, don't smoke, get active, and see your doctor. More info: (866) 399-6789.  
<http://www.everydaychoices.org>

American Stroke Institute, a Division of the American Heart Association; publishes the journal *Stroke* (<http://www.strokeassociation.org/presenter.jhtml?identifier=1200037>)  
Evidence Report/Technology Assessment No. 127, Acute Stroke, Evaluation and Treatment

American Stroke Association  
National Center  
7272 Greenville Avenue  
Dallas TX 75231  
1-888-4-STROKE or 1-888-478-7653

National Heart, Lung, and Blood Institute. (<http://www.nhlbi.nih.gov>); the major federal health institute for research and education on heart disease and high blood pressure  
National Cholesterol Education Program. (Bethesda (MD): National Heart, Lung, and Blood Institute (US) <http://www.nhlbi.nih.gov/about/ncep/index.htm>

- *National Cholesterol Education Program. (2002) Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. National Heart, Lung, and Blood Institute, National Institutes of Health. NIH Publication No. 02-5215. Accessed 10-18-05*  
<http://www.nhlbi.nih.gov/guidelines/cholesterol/index.htm>
- Ten year heart attack risk calculator;  
<http://hin.nhlbi.nih.gov/atp/iii/calculator.asp?usertype=prof>

National High Blood Pressure Education Program. Bethesda (MD): National Heart, Lung, and Blood Institute (U.S.); [modified 1999 Oct 12; cited 2000 Apr 18].

Available from: <http://www.nhlbi.nih.gov/about/nhbpep/index.htm>

- National Heart, Lung, and Blood Institute. (2005). The Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents. *National Institutes of Health. NIH Publication No. 02-5267.*  
[http://www.nhlbi.nih.gov/health/prof/heart/hbp/hbp\\_ped.htm](http://www.nhlbi.nih.gov/health/prof/heart/hbp/hbp_ped.htm)
- National Heart, Lung, and Blood Institute. (2005). The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7). *National Institutes of Health. NIH Publication No. 04-5230. Accessed 10-18-05.*  
<http://www.nhlbi.nih.gov/guidelines/hypertension/index.htm>

Other NHLBI selected publications and resources:

- AHA/NHLBI. (2005) Diagnosis and management of the metabolic syndrome; AHA/NHLBI Scientific Statement on Metabolic Syndrome. *Circulation. 105:169.*  
<http://circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.105.169404v1>
- NHLBI/National Recreation and Parks Association. (2001). Hearts and Parks Community Mobilization Guide. *National Institutes of Health. NIH Publication No. 01-1655.*  
[http://www.nhlbi.nih.gov/health/prof/heart/obesity/hrt\\_n\\_pk/hnp\\_resg.htm](http://www.nhlbi.nih.gov/health/prof/heart/obesity/hrt_n_pk/hnp_resg.htm)
- US DHHS. Public Health Service. *Report of the Task Force on Behavioral Research in Cardiovascular, Lung, and Blood Health and Disease (1998).* National Institutes of Health <http://www.nhlbi.nih.gov/resources/docs/taskforc.htm>
- Latino Cardiovascular Health Resources website. Professional and consumer materials. [http://www.nhlbi.nih.gov/health/prof/heart/latino/latin\\_pg.htm](http://www.nhlbi.nih.gov/health/prof/heart/latino/latin_pg.htm)  
Accessed 10/18/05.
- JumpSTART, a school-based program that offers elementary school teachers a series of fun, field-tested activities to promote active, healthy lifestyles for grades three to five. Website contains a letter of introduction, an 8-page teachers' guide, and a 2-page handout to send home.  
<http://www.nhlbi.nih.gov/health/prof/heart/other/jumpstr.htm> Accessed 10/18/05.

NHLBI Information Center  
Attention: Web Site

P.O. Box 30105  
Bethesda, MD 20824-0105  
301-592-8573 (Voice)  
301-592-8563 (FAX)

E-mail: [NHLBIinfo@rover.nhlbi.nih.gov](mailto:NHLBIinfo@rover.nhlbi.nih.gov)

California Heart Disease and Stroke Prevention Program.

<http://www.dhs.ca.gov/ps/cdic/chdsp/>

E-mail: [heart@dhs.ca.gov](mailto:heart@dhs.ca.gov)

California Department of Health Services WISEWOMAN Program.

<http://www.dhs.ca.gov/ps/cdic/ccb/cds/wisewoman.htm>

E-mail: [heart@dhs.ca.gov](mailto:heart@dhs.ca.gov)

Centers for Disease Control and Prevention (CDC). Cardiovascular Health website <http://www.cdc.gov/cvh>. Includes maps of CHD or stroke risk for each California county and extensive atlas on heart disease and stroke.

CDC WISEWOMAN website. Well-Integrated Screening and Evaluation for Women Across the Nation program; administered nationally by the CDC (See also California WISEWOMAN Program above). <http://www.cdc.gov/wisewoman/>

Elsevier Science, Inc. publishes *Journal of the American Dietetic Association*, *American Journal of Hypertension*, *Journal of the American College of Cardiology*; *Atherosclerosis*; *American Journal of Preventive Medicine*

655 Avenue of the Americas  
New York, NY 10010  
(212) 989-2997

Food and Drug Administration (U.S.). Health Claims that Meet Significant Scientific Agreement (SSA): Approved Health Claims; site updated June 2004.

<http://www.cfsan.fda.gov/~dms/lab-ssa.html>

Framingham Heart Study. Framingham (MA): National Heart, Lung, and Blood Institute (US); [modified 2000 Feb 3; cited 2000 Apr 24]. Available from:

<http://www.nhlbi.nih.gov/about/framingham/index.html>

Heart Check. Assessing Worksite Support for a Heart Healthy Lifestyle. Version 4.1. New York State Dept. of Health, Healthy Heart Program. The Heart Check survey is a 250-question instrument that looks at the ways in which a workplace environment supports employee wellness and healthy living in the areas of nutrition, physical activity, smoking, overall wellness, and employer/employee readiness.

<http://www.co.tompkins.ny.us/wellness/worksite/heartck/sitehistory.html>

International Society on Hypertension in Blacks (ISHIB); scope now includes renal disease, diabetes, stroke, and lipid disorders; publishes quarterly journal *Ethnicity and Disease*

2045 Manchester Street, NE  
Atlanta, GA 30324  
(404) 875-6263

Sports, Cardiovascular, and Wellness Nutritionists (SCAN) - A practice group of the American Dietetic Association; conducts annual symposium; self-study materials; listserv on Cardiovascular Nutrition; publishes quarterly newsletter, *PULSE*; *SCAN's Annual Guide to Books and Organizations*; *SCAN's Innovative Product Catalogue of Nutrition and Health Education Materials* ([www.scandpg.org](http://www.scandpg.org))

Dietetic Practice Group of the American Dietetic Association  
7730 East Belleview, G-6  
Englewood, CO 80111  
(303) 779-1950

## **References**

1. Centers for Disease Control (CDC). Preventing Heart Disease and Stroke: Addressing the Nation's Leading Killers. 2005. Available at: [http://www.cdc.gov/nccdphp/publications/aag/pdf/aag\\_cvh2005.pdf](http://www.cdc.gov/nccdphp/publications/aag/pdf/aag_cvh2005.pdf). Accessed February 14, 2006.
2. USDHHS: US Department of Health and Human Services. *Chronic Diseases and Their Risk Factors: The Nation's Leading Causes of Death*. Atlanta, GA: Centers for Disease Control and Prevention; 1999.
3. AHA: American Heart Association. Heart Disease and Stroke Statistics 2005 Update. 2005. Available at: <http://www.americanheart.org/downloadable/heart/1105390918119HDSSStats2005Update.pdf>. Accessed February 14, 2006.
4. USDHHS: US Department of Health and Human Services. Healthy People 2010. (*Conference Edition in two volumes*). Washington, DC: January 2000. Last reviewed June 2005. Available at: <http://www.cdc.gov/cvh/hp2010/objectives.htm>. Accessed February 14, 2006.
5. Obarzanek, E., Sacks F.M., Vollmer, W.M., et al. DASH Research Group. Effects on blood lipids of a blood pressure-lowering diet: the Dietary Approaches to Stop Hypertension (DASH) Trial. *Am J Clin Nutr.* July 2001;74(1):80-9.
6. Sacks, F.M., Appel, L.J., Moore, T.J. et al. Dietary approach to prevent hypertension: a review of the Dietary Approaches to Stop Hypertension (DASH) Study. *Clin Cardiol.* July 1999;22(7 Suppl):III6-10.

7. Lin, P.H, Ginty, F., Appel, L.J. et al. The DASH diet and sodium reduction improve markers of bone turnover and calcium metabolism in adults. *J Nutr.* October 2003;133(10):3130-6.
8. Reims, H.M., et, al. Home blood pressure monitoring. *Journal of Hypertension.* July 2005;23(7):1437-1439.
9. AHA: American Heart Association. *American Heart Association Public Policy Agenda 2003–06.* 2005. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=3009617>. Accessed October 10, 2005.
10. AHA: American Heart Association. Heart Attack, Stroke & Cardiac Arrest Warning Signs. 2005. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=3053>. Accessed February 14, 2006.
11. Medline Plus; A service of the National Library of Medicine and the National Institutes of Health. Arrhythmias. 2005. Available at: <http://www.nlm.nih.gov/medlineplus/ency/article/001101.htm>. Accessed February 14, 2006.
12. NHLBI: National Heart, Lung and Blood Institute. What is Atherosclerosis? 2003. Available at: [http://www.nhlbi.nih.gov/health/dci/Diseases/Atherosclerosis/Atherosclerosis\\_WhatIs.html](http://www.nhlbi.nih.gov/health/dci/Diseases/Atherosclerosis/Atherosclerosis_WhatIs.html). Accessed February 14, 2006.
13. Medline Plus; A service of the National Library of Medicine and the National Institutes of Health. Atherosclerosis. 2005. Available at: <http://www.nlm.nih.gov/medlineplus/ency/article/000171.htm>. Accessed February 14, 2006.
14. National Institute of Neurological Disorders and Stroke. NINDS Stroke Information Page. 2005. Available at: <http://www.ninds.nih.gov/disorders/stroke/stroke.htm>. Accessed October 22, 2005.
15. Fox, P., Gazzaniga, J., Karter, A., et al. The economic costs of cardiovascular disease mortality in California, 1991: implications for public health policy. *J Public Health Policy.* 1996;17:442-459.
16. CDC: Centers for Disease Control. *A Report of the Surgeon General: Physical Activity and Health – Women.* USDHHS. The President’s Council on Physical Fitness and Sports.
17. ASA: American Stroke Association. Stroke Facts 2005: All Americans. 2005. Available at: <http://www.americanheart.org/downloadable/heart/1106668683152AllAmSpanStrokeFacts05.pdf>. Accessed February 14, 2006.
18. Center for Health Statistics, Office of Health Information and Research. CDHS: California Department of Health Services website. Cerebrovascular Disease

Deaths California. 2002. Available at:  
[http://www.dhs.ca.gov/hisp/chs/OHIR/reports/leadingcause/stroke2000\\_2003.pdf](http://www.dhs.ca.gov/hisp/chs/OHIR/reports/leadingcause/stroke2000_2003.pdf)

Accessed February 14, 2006.

19. AHA: American Heart Association. Heart Disease and Stroke Statistics 2004 Update. 2004. Available at:  
<http://www.americanheart.org/presenter.jhtml?identifier=4725>. Accessed February 14, 2006.
20. Muntner, P, He J, Cutler JA, Wildman RP, Whelton PK. Trends in Blood Pressure Among Children and Adolescents. *JAMA*. 2004;291(17):2107-13.
21. NHLBI: National Heart, Lung, and Blood Institute. The 4<sup>th</sup> Report on High Blood Pressure in Children and Adolescents. 2004. Available at:  
[http://hin.nhlbi.nih.gov/nhbpep\\_slds/bpped/download/hbp-ch.pdf](http://hin.nhlbi.nih.gov/nhbpep_slds/bpped/download/hbp-ch.pdf). Accessed February 14, 2006.
22. University of California at Los Angeles (UCLA) Center for Health Policy Research. 2003 California Health Interview Survey (CHIS) Data: Prevalence data of selected cardiovascular diseases. Available at: <http://www.chis.ucla.edu/>. Accessed February 14, 2006.
23. Bravata DM, Wells CK, Gulanski B, Kernan WN, Brass LM, Long J, Concato J. Racial disparities in stroke risk factors: the impact of socioeconomic status. *Stroke*. 2005;36(7):1507-11.
24. California Department of Health Services Center for Health Statistics. Ten Leading Causes of Death, Death Rates, Age-Adjusted Rates, and Percent Changes by Sex – Black – California 2002-2003. 2004a. Available at:  
<http://www.dhs.ca.gov/hisp/chs/OHIR/tables/datafiles/vsofca/0510c.pdf>. Accessed February 14, 2006.
25. California Department of Health Services Center for Health Statistics. California Department of Health Services Center for Health Statistics. Ten Leading Causes of Death, Death Rates, Age-Adjusted Rates, and Percent Changes by Sex – White/Other/Unknown – California 2002-2003. 2004b. Available at:  
<http://www.dhs.ca.gov/hisp/chs/OHIR/tables/datafiles/vsofca/0510d.pdf>. Accessed February 14, 2006.
26. Bolli, P. The question of the role of ethnicity on cardiovascular risk: does it matter where we come from? *Journal of Hypertension*. July 2005;23(7):1331-1333.
27. Centers for Disease Control and Prevention. Racial/ethnic disparities in prevalence, treatment and control of hypertension—United States 1990-2000. *MMWR*. January 2005;54(01):7-9.
28. UCLA Center for Health Policy Research. 2001 California Health Interview Survey (CHIS) Data: Prevalence data of selected cardiovascular diseases. 2001. Available at: <http://www.chis.ucla.edu/>. Accessed February 14, 2006.

29. CDC: Centers for Disease Control. Cardiovascular Health: Heart Disease and State Maps – California 1996-2000. 2005. Available at:  
[http://apps.nccd.cdc.gov/giscvh/\(gbhksk455hvswcq24i0c4y45\)/map.aspx](http://apps.nccd.cdc.gov/giscvh/(gbhksk455hvswcq24i0c4y45)/map.aspx)  
Accessed February 17, 2006.
30. USDHHS: US Department of Health and Human Services. Progress Review: Heart Disease and Stroke. 2003. Available at:  
<http://healthypeople.gov/data/2010prog/focus12/>. Accessed February 14, 2006.
31. Centers for Disease Control. Achievements in public health, 1900-1999: Decline in deaths from heart disease and stroke--United States, 1900-1999. *MMWR*. 1999;48:649-656.
32. National Cholesterol Education Program Third Adult Treatment Panel. *Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults - Adult Treatment Panel III (ATP III): Final Report*. Bethesda, MD: National Institutes of Health, National Heart, Lung, and Blood Institute; 2002:02-5215.
33. Kris-Etherton, P. and Burns, J.H. *Cardiovascular Nutrition: Strategies and Tools for Disease Management and Prevention*. Chicago, IL: The American Dietetic Association; 1998.
34. AHA: American Heart Association. Healthy Lifestyles web pages. 2005. Retrieved from:  
<http://www.americanheart.org/presenter.jhtml?identifier=1200009>. Accessed February 14, 2006.
35. CDC: Centers for Disease Control. Preventing Heart Disease and Stroke. 2005. Available at: <http://www.cdc.gov/nccdphp/publications/aag/cvh.htm>. Accessed February 14, 2006.
36. Sempos, C.T., Cleeman, J.I. and Carroll, M.K.; et al. Prevalence of high blood cholesterol among US adults: An update based on guidelines from the second report of the National Cholesterol Education Program Adult Treatment Panel. *JAMA*. 1993;269:3009–3014. Available from: [PubMed; PMID 8501843](#). Accessed February 14, 2006.
37. Hu, F.B., Stampfer M.J., Manson J.E., et al. Dietary fat intake and the risk of coronary heart disease in women. *New England Journal of Medicine*. 1996;337:1491-1499.
38. Anderson JT, Grande F, Keys A. Independence of the effects of cholesterol and degree of saturation of the fat in the diet on serum cholesterol in man. *Am J Clin Nutr*. 1976;29(11):1184-9.
39. Djousse, L. et al. Fruit and vegetable consumption and LDL cholesterol: the National Heart, Lung and Blood Institute Family Heart Study. *Am J Clin Nutr*. 2004;79:213-217.

40. AHA American Heart Association. What is Homocysteine? 2005. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=535>. Accessed February 14, 2006.
41. Malinow, M.R., Bostom, A.G. and Krauss, R.M. Homocysteine, diet and cardiovascular diseases: A statement for healthcare professionals from the Nutrition Committee, American Heart Association. *Circulation*. 1999;99:178-182.
42. Appel, L.J., Miller, E.R. 3rd, Jee, S.H., et al. Effect of dietary patterns on serum homocysteine: results of a randomized, controlled feeding study. *Circulation*. 2000;22;102(8):852-7. Aug 2000.
43. Centers for Disease Control and Prevention. *Diabetes Surveillance Report, 1999*. Atlanta, GA: US Department of Health and Human Services; 1999.
44. Hedley, A.A., Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. *JAMA*. 2002;291:2847-50.
45. University of California Los Angeles. CHIS: California Health Interview Survey Data 2003: Prevalence data of body mass index – 4 levels. 2005. Available at: <http://www.chis.ucla.edu/> Accessed October 24, 2005.
46. California Center for Public Health Advocacy. *The Growing Epidemic: Child Overweight on the Rise in California Assembly Districts*. 2005. Davis, CA.
47. Gregg EW, Cheng YJ, Cadwell BL, Imperatore C, Williams DE, Flegal KM, Narayan KM, Williamson DF. Secular Trends in Cardiovascular Disease Risk Factors According to Body Mass Index in US Adults. *Obstet Gynecol Surv*. 2005;60(10):660-661.
48. Centers for Disease Control and Prevention. BRFSS: Behavioral Risk Factor Surveillance System Interactive Website: Prevalence - Physical Activity - Adults with 30+ minutes of moderate physical activity five or more days per week, or vigorous physical activity for 20+ minutes three or more days per week. 2004. Available at: <http://apps.nccd.cdc.gov/brfss/display.asp?state=CA&cat=PA&yr=2003&qkey=4418&grp=0&SUBMIT4=Go>. Accessed December 20, 2005.
49. Powell KE, Thompson PD, Caspersen CJ, Ford ES. Physical activity and the incidence of coronary heart disease. *Annu Rev Public Health*. 1987;8:253-287.
50. Centers for Disease Control and Prevention. Public health focus: physical activity and the prevention of coronary heart disease. *MMWR*. 1993;42:669-672.
51. Eaton CB. Relation of physical activity and cardiovascular fitness to coronary heart disease, Part I: A meta-analysis of the independent relation of physical activity and coronary heart disease. *J Am Board Fam Pract*. 1992;5(1):31-42.

52. Centers for Disease Control. Physical activity levels among children 9-13 years – United States. *MMWR*. 2003;52(33):785-788.
53. Ford, E.S, Mokdad, A.H, Giles, W.H. and Mensah, GA. Serum Total Cholesterol Concentrations and Awareness, Treatment, and Control of Hypercholesterolemia Among US Adults: Findings From the National Health and Nutrition Examination Survey, 1999 to 2000. *Circulation*. 2003;107:2185–2189.
54. AHA: American Heart Association. Women & Cardiovascular Disease. 2005. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=1200011>. Accessed February 14, 2006.
55. Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. *Heart Disease and Stroke Statistics 2005 Update*. 2003.
56. Ferketich, AK and Binkley PF. Psychological distress and cardiovascular disease: results from the 2002 National Health Interview Survey. *Eur. Heart J*. 2002;26:1923–1929.
57. Grundy S.M., Cleeman JI, Rifkind BM, Kuller LH. Cholesterol lowering in the elderly population. Coordinating Committee of the National Cholesterol Education Program. *Arch Intern Med*. 1999;159(15):1670-8.
58. Anding JD, Kubena KS, McIntosh WA, O'Brien B. Blood lipids, cardiovascular fitness, obesity, and blood pressure: The presence of potential coronary heart disease risk factors in adolescents. *JADA*. 1996;96:238-242.
59. Kris-Etherton PM, Pearson TA, Wan Y, et al. High monounsaturated fatty acid diets lower both plasma cholesterol and triacylglycerol concentrations. *Am J Clin Nutr*. 1999;70(6):1009-1015.
60. USDHHS, USDA: US Department of Health and Human Services, US Department of Agriculture. Dietary Guidelines for Americans 2005. 2005. Available at: <http://www.health.gov/dietaryguidelines/dga2005/document/default.htm>. Accessed February 14, 2006.
61. McNamara DJ, Howell WH. Epidemiologic data linking diet to hyperlipidemia and arteriosclerosis. *Semin Liver Dis*. 1992;12(4):347-55.
62. Johnson, RW. *A Nation at Risk: Obesity in the United States – A Statistical Source book*. American Stroke Association: American Heart Association. 2005.
63. Nielsen, SJ and Popkin, BM. Patterns and trends in food portion sizes, 1977-1998. *JAMA*. 2003;289:450-453
64. KKF: Kaiser Family Foundation. *Generation M: Media in the Lives of 8-18 Year Olds*. Menlo Park, California: Kaiser Family Foundation; 2005.
65. NHLBI: National Heart, Lung, and Blood Institute. Dietary Approaches to Stop Hypertension (DASH). 2003. Available at:

<http://www.nhlbi.nih.gov/resources/deca/descriptions/dash.htm> Accessed February 17, 2006.

66. Svetkey LP, Simons-Morton D, Vollmer WM, Appel LJ, Conlin PR, Ryan DH, Ard J, Kennedy BM. Effects of dietary patterns on blood pressure: subgroup analysis of the Dietary Approaches to Stop Hypertension (DASH) randomized clinical trial. *Arch Intern Med.* 1999;159(3):285-93.
67. Moore, L.L., Singer, M.R., Bradlee, M.L. et al. Intake of Fruits, Vegetables, and Dairy Products in Early Childhood and Subsequent Blood Pressure Change. *Epidemiology.* January 2005;16(1):4-11.
68. Hayman LL, Reineke PR. Preventing coronary heart disease: the implementation of healthy lifestyle strategies for children and adolescents. *Cardiovasc Nurs.* Sep-Oct 2003;18(4):294-301.
69. California Department of Health Services. WISEWOMAN Program: Heart of the Family. 2004. Available at: <http://www.dhs.ca.gov/cancerdetection/wisewoman/default.htm>. Accessed February 17, 2006.
70. Whelton, S.P., He, J., Whelton, P.K., Muntner, P. Meta-analysis of observational studies on fish intake and coronary heart disease. *Am J Cardiol.* 2004;1;93(9): 1119-23.
71. He, K., Song, Y., Daviglius, M.L. et al. Accumulated evidence on fish consumption and coronary heart disease mortality: a meta-analysis of cohort studies. *Circulation.* June 2004;109(22):2705-11.
72. Osganian, S.K., Stampfer, M.J., Rimm, E. et al. Dietary carotenoids and risk of coronary artery disease in women. *Am J Clin Nutr.* June 2003;77(6):1390-9.
73. Krauss RM, Eckel RH, Howard B, et al. AHA Dietary Guidelines: revision 2000: A statement for healthcare professionals from the Nutrition Committee of the American Heart Association. *Circulation.* 2000;102:2284-2299.
74. Erdman JW Jr. AHA Science Advisory: Soy protein and cardiovascular disease: A statement for healthcare professionals from the Nutrition Committee of the AHA. *Circulation.* 2000;102(20):2555-9.
75. Katan, M.B., Grundy, S.M., Jones, P. et al. Efficacy and safety of plant stanols and sterols in the management of blood cholesterol levels. *Mayo Clin Proc.* August 2003;78(8):965-78.
76. Kris-Etherton PM, Etherton TD, Carlson J, Gardner C. Recent discoveries in inclusive food-based approaches and dietary patterns for reduction in risk for cardiovascular disease. *Curr Opin Lipidol.* 2002;13:397-407.

77. US Food and Drug Administration, Center for Food Safety and Applied Nutrition 1994. A Food Labeling Guide (Editorial revisions June 1999 and November 2000).
78. Ornish D, Scherwitz LW, Billings JH, Brown SE, Gould KL, Merritt TA, Sparler S, Armstrong WT, Ports TA, Kirkeeide RL, Hogeboom C, Brand RJ. Intensive lifestyle changes for reversal of coronary heart disease. *JAMA*. 1998;280(23): 2001-7.
79. Willett WC, Sacks F, Trichopoulou A, Drescher G, Ferro-Luzzi A, Helsing E, Trichopoulos D. Mediterranean diet pyramid: a cultural model for healthy eating. *Am J Clin Nutr*. 1995;61(6 Suppl):1402S-1406S.
80. Franco, O.H., et, al. The Polymeal: a more natural, safer, and probably tastier (than the Polypill) strategy to reduce cardiovascular disease by more than 75 percent [Electronic Version]. *The British Journal of Medicine*. 2004;329:18-25. Available from: <http://www.bmj.com>. Accessed February 14, 2006.
81. AHA: American Heart Association. Dietary Guidelines for Healthy Children. 2005. Available at: <http://www.americanheart.org/presenter.jhtml?identifier=4575>. Accessed February 14, 2006.
82. California Heart Disease and Stroke Prevention Program. 2004 Public Forums on Heart Disease and Stroke Prevention and Treatment, Draft Report. 2005. Available at: <http://www.dhs.ca.gov/ps/cdic/chdsp/Public%20Forum%20Report%2005-31-05.pdf>. Accessed October 10, 2005.