

20. HEART DISEASE AND STROKE

Number	Objective
1	Coronary heart disease deaths
2	Female deaths after heart attack
3	Knowledge of early warning symptoms of heart attack
4	Provider counseling about early warning symptoms of heart attack
5	Females aware of heart disease as the leading cause of death
6	High blood pressure
7	Controlled high blood pressure
8	Action to help control blood pressure
9	Blood pressure monitoring
10	Serum cholesterol levels
11	Blood cholesterol levels
12	Blood cholesterol screening
13	Treatment of LDL cholesterol
14	Stroke deaths
15	Knowledge of early warning symptoms of stroke
16	Provider counseling about early warning symptoms of stroke

Heart Disease and Stroke

Goal

Enhance the cardiovascular health and quality of life of all Americans through improvement of medical management, prevention and control of risk factors, and promotion of healthy lifestyle behaviors.

Terminology

(A listing of all acronyms used in this publication appears on page 27 of the Introduction.)

Heart disease: Heart disease is the leading cause of death and a common cause of morbidity in the United States. Coronary heart disease (CHD) and ischemic heart disease are more specific names for the principal forms of heart disease. A **heart attack**, also called a myocardial infarction, occurs when a coronary artery (an artery that feeds the heart muscle) becomes blocked, usually by a blood clot (thrombus), resulting in lack of blood flow to the heart muscle. As a result, part of the heart muscle dies (infarcts). Chest pain, called angina pectoris, can occur when reduced blood flow caused by narrowing of the coronary artery from atherosclerosis results in too little oxygen to the heart muscle for its needs. The terms **coronary heart disease** (CHD) or **ischemic heart disease** are used when there are clinical symptoms, such as angina, from coronary atherosclerosis. The term **coronary artery disease** (CAD) is used when there is atherosclerosis in the coronary arteries but no symptoms. Atherosclerosis, in the coronary arteries, is the underlying cause of heart attacks, CHD, and CAD.

Annually, about 1.1 million people in the United States experience a heart attack. Nearly 500,000 Americans die from CHD, and more than half of these deaths occur suddenly, within 1 hour of symptom onset, outside the hospital setting.¹ Rapid identification and early treatment of patients with heart attacks are supported by clinical trial research that demonstrates that time is a fundamental factor in reducing morbidity and mortality from heart attack and cardiac arrest. A dramatic relationship has been shown between the onset of heart attack symptoms, reperfusion treatment, and outcomes, with better outcomes the sooner the treatment and the best outcomes for patients treated within the first hour after the onset of symptoms.

Modifying risk factors, such as lowering high blood pressure, lowering high blood cholesterol, stopping cigarette smoking, reducing overweight and obesity, increasing physical activity, and controlling diabetes, has been shown to reduce heart disease risk. The major risk factors are widely distributed in the population, with some individuals who have particularly high risk factor levels requiring medical treatment.

Stroke: Stroke, the third leading cause of death in the United States, is a form of cerebrovascular disease that affects the arteries of the central nervous system. Fatal strokes include deaths resulting from occlusion, thrombosis, embolism, or cerebral hemorrhage. However, most deaths are classified as acute ill-defined forms of stroke. A stroke occurs when blood vessels bringing oxygen and nutrients to the brain burst or become clogged by a blood clot or some other particle. Because of this rupture or blockage, part of the brain does not get the flow of blood it needs. Deprived of oxygen, nerve cells in the affected area of the brain cannot function and die within minutes. And when nerve cells cannot function, the part of the body controlled by these cells cannot function either. Deaths from stroke can be reduced or delayed by preventing and controlling risk factors and using the most effective therapies in a timely manner. Many risk factors for stroke are about the same as coronary heart disease. These include high blood pressure, high blood cholesterol, smoking, and overweight.

1 **Overview**

2
3 Heart disease is the leading cause of death for all Americans, and coronary heart disease (CHD) is the
4 largest portion. About 500,000 people die each year from CHD. Heart disease death rates among men
5 are now about where they were 100 years ago, and among women they are 37 percent lower. Heart
6 disease is the leading cause of death in postmenopausal women. More than 240,000 women die of heart
7 attacks each year, which is approximately one-half of all coronary deaths. CHD disproportionately
8 affects African Americans. By 1995, the CHD mortality rate was 39 percent higher in African Americans
9 than in whites.

10
11 Many scientific studies show that certain characteristics increase the risk of CHD. These are called risk
12 factors. The major modifiable risk factors are high blood pressure, high blood cholesterol, cigarette
13 smoking, physical inactivity, and obesity. Counseling by physicians could help to increase awareness
14 about signs and symptoms of a heart attack and also help to reduce and control factors that increase the
15 risk of a heart attack. Thus, to focus resources on individuals who might derive the greatest benefit,
16 educational and counseling interventions should be aimed at reducing patient delay for those individuals
17 who are at high risk for a future acute myocardial infarction.

18
19 Based on NHANES III data, approximately 14 million Americans have CHD; based on interviews in
20 1988-94, about 4 million have cerebrovascular disease, and about 2 million have peripheral vascular
21 disease.² Patients with established CHD, clinical atherosclerotic disease of the aorta or peripheral
22 arteries, or clinical cerebrovascular disease are at high risk for subsequent myocardial infarction or CHD
23 death.³⁻⁵ About 50 percent of all myocardial infarctions and at least 70 percent of CHD deaths occur in
24 individuals with prior manifestations of cardiovascular disease.^{6,7} The risk for subsequent myocardial
25 infarction and death in patients with established CHD (or other atherosclerotic disease) is fivefold to
26 sevenfold higher than for the general population.⁸ It is particularly important to focus within this high-
27 risk patient group on women, African Americans, and the elderly; these populations have longer reported
28 delays in seeking care in response to acute myocardial infarction symptoms.⁹ Thus, progress against
29 CHD has been especially noteworthy. Not only do we have lifesaving treatments for heart attacks, but
30 also we are able to prevent many of them from occurring or at least postpone them until old age.

31
32 Persons with systemic lupus erythematosus have up to 50 times the rate of heart disease, stroke, and end-
33 stage renal disease as other people.¹⁰ Rates of lupus are higher among African Americans than whites.
34 This high-risk subgroup should be specially targeted because of the potentially better return for any
35 interventions contemplated and because of the effect of successful interventions in contributing to the
36 reduction of health disparities in these outcomes by race.

37
38 The CHD mortality rate in the general population has declined generally over the past 35 years.
39 However, the rate increased more in males than in females between 1920 and 1960. It began to decline
40 earlier in females (1950s) than in males (1960s). Absolute declines are much greater in males than in
41 females. Rates of decline have been greater in males, but in recent years they have been greater in
42 females.

43
44 Since 1915, the heart disease mortality rate has been consistently higher in the African American
45 population than in the white population. The long-term rise and fall in heart disease mortality occurred in
46 both the white and African American populations. In 1995, the age-adjusted death rate for heart disease
47 was 42 percent higher in African American males than in white males, 65 percent higher in African
48 American females than white females, and almost twice as high in males as in females. The age-specific
49 death rates for heart disease are higher in African American males than in white males until age 85 and
50 higher in African American females than in white females until age 85.

1
2 Specifically, deaths from CHD, the major form of heart disease, increased until its peak in the mid-1960s.
3 Since then, the death rate has been declining. CHD accounted for about 480,000 deaths in 1995. CHD
4 mortality since 1950 demonstrates a clear rise and fall for each race-sex group. The rates of decline are
5 steeper in white males than in African-American males; the death rate is now higher in African American
6 males than in white males.

7
8 While the age-adjusted death rate for CHD continues to decline each year, declines in the unadjusted
9 death rate and in numbers of deaths have slowed because of an increase in the numbers of older
10 Americans, who have higher rates of CHD. The CHD declines show that in the 1980s white males and
11 females experienced steeper declines than African American males and females. However, African
12 American females had the steepest rate of decline in the 1970s but the lowest decline in the 1980s. In
13 contrast with the 1970s, males had a steeper rate of decline than females in the 1980s. Between 1980 and
14 1995, the percentage declines were greater in males than in females, greater in whites than in African
15 Americans, and least for African American females. Finally, CHD mortality is higher in African
16 American males than in white males, higher in African American females than in white females, and
17 about twice as high in males as in females.

18
19 In recent years, immense strides have been made in the identification and treatment of a patient with a
20 heart attack with the development of an armamentarium of powerful technologies and drugs.
21 Thrombolytic agents, angioplasty,¹¹⁻¹⁵ and coronary artery bypass surgery can reestablish blood flow to
22 the infarcting areas. As a consequence, significant reductions in mortality and morbidity are now
23 possible. The current paradigm for treatment of patients with heart attacks is one of the early acute
24 interventions to open the blocked artery, thereby reestablishing blood flow and preventing heart damage.
25 Because of the importance of early treatment for acute myocardial infarction, there is growing interest in
26 detection of the earliest warning symptoms of acute coronary syndromes (including unstable angina as
27 well as acute myocardial infection), in order to gain “lead time” for treating these patients.

28
29 Controlled trials of thrombolytic agents have shown significant and substantial reductions in acute
30 mortality, with benefit markedly outweighing risk.¹⁶⁻²⁰ Thrombolytic therapy for patients with a heart
31 attack has significantly greater benefit for those treated within the first or second hours after the onset of
32 symptoms than those treated in the third to sixth hours.²¹ There is modest but significant benefit for
33 patients treated between 6 and 12 hours after the onset of symptoms as opposed to those treated beyond
34 that time.²² Given the rapid decline in benefit, the potential for myocardial salvage is substantially greater
35 for patients who present within the first 1 to 2 hours after the onset of symptoms, with 60 minutes or less
36 being the optimal time to treatment.

37
38 As therapies have become increasingly more effective, delays in treatment initiation and lack of
39 implementation of these therapies pose major barriers to effective management. Thus far, efforts to
40 provide appropriate access to timely and optimal care to patients presenting with acute coronary
41 syndromes are generally not organized into a unified, cohesive system in communities across the United
42 States.

43
44 Women in general have poorer outcomes after a myocardial infarction than men. Forty-four percent of
45 women who have a myocardial infarction die within a year compared to 27 percent of men. At older
46 ages, women who have heart attacks are twice as likely as men to die from them within a few weeks. Part
47 of these differences are explained by the presence of coexisting conditions such as diabetes or by the
48 presence of other unfavorable prognostic factors, or both. Despite control for these factors, there are still
49 independent associations between female sex and mortality after acute myocardial infarction. Procedure-
50 related complications are more frequent in women than in men after coronary intervention with new
51 devices. Additional studies are needed to evaluate the complex interplay of clinical, vessel, and lesion

1 characteristics on mortality and complications from specific interventional techniques and to determine
2 whether gender-specific interventional strategies may be beneficial.

3
4 An estimated 158,000 people in the United States die annually from stroke, making it the third leading
5 cause of death. Death rates for stroke are highest in the southeastern States. Even though stroke death
6 rates have been decreasing, the decline among African Americans has not been as substantial as the
7 decline in total population. The racial differences in stroke incidence and mortality are even greater than
8 those found in CHD. Nevertheless, the death rates have declined, due in great measure to improvements
9 in the detection and treatment of high blood pressure. The National Center for Health Statistics estimates
10 that the average American can expect to live 5-1/2 years longer today than was the case even 30 years
11 ago, and nearly 4 years of that gain in life expectancy can be attributed to our progress against
12 cardiovascular disease, including CHD and stroke.

13
14 Stroke mortality rates have been declining over the past 30 years. The decline in stroke mortality also
15 accelerated in the 1970s for whites and African Americans. However, recent data show that the rates
16 have leveled off. Stroke mortality rates show that the declines accelerated in the 1970s for both males
17 and females. The rate of decline has slowed, however, in recent years. Moreover, the male-female gap
18 widened until the 1980s and then narrowed.

19
20 Stroke mortality is highest in African American females born before 1950 and highest in African
21 American males born after 1950. Stroke mortality has been lowest in white females since 1915. Stroke
22 mortality declines were smaller in the 1980s compared with the 1970s, particularly in the African
23 American population. The age-adjusted death rate for stroke has flattened since 1992 and the unadjusted
24 death rate is increasing. Percentage declines from 1981 to 1995 in stroke mortality have no marked age
25 patterns. Among the sex-race groups, declines are smallest in African American males. Finally, age-
26 adjusted stroke mortality is almost 80 percent higher in African Americans than in whites and about 17
27 percent higher in males than in females. Moreover, age-specific stroke mortality is higher in African
28 Americans than in whites in all age groups up to age 84 and higher in males than in females throughout
29 all adult age groups. Death rates from stroke are highest in the Southeastern United States.

30
31 The age composition of the U.S. population has changed dramatically during the 20th century and will
32 continue to change during the 21st century. One in every four Americans is now aged 50 or older. In 30
33 years, about one-third will be aged 50 or older. Most impressive has been the increase in the size of the
34 population aged 65 years and older. In addition, the percentage of persons aged 85 years and over, the
35 "oldest old" population, has increased greatly. Heart disease and stroke mortality rise significantly after
36 age 65, accounting for more than 40 percent of all deaths among people aged 65 to 74 and almost 60
37 percent at aged 85 and over.

38
39 Heart disease and stroke share several common risk factors, including high blood pressure, cigarette
40 smoking, and high blood cholesterol. Overweight and obesity, physical inactivity, and diabetes are
41 additional risk factors for heart disease. However, rates of overweight and obesity, physical inactivity,
42 and smoking remain challenges. A variety of studies have shown that lifestyle, as well as pharmacologic
43 interventions, can be efficacious in reducing CHD and stroke risk factors. Studies have focused on
44 treatment and control of high blood pressure and high blood cholesterol. In addition, studies have focused
45 on effective lifestyle approaches to preventing high blood pressure, including controlling weight, reducing
46 alcohol consumption, reducing salt intake, and becoming physically active. Lifestyle interventions to
47 prevent or lower high blood cholesterol include eating a diet lower in saturated fat and cholesterol,
48 reducing excess weight, and becoming more physically active. Atrial fibrillation (AF) is a risk factor for
49 stroke and heart failure in older persons and causes significant morbidity, disability, and mortality. It is
50 the most common cardiac arrhythmia seen in clinical practice, affecting over 2 million Americans today.
51 This number may continue to rise as the baby boom generation ages, with more persons living older

1 longer (thus increasing susceptibility to AF) and also as more patients survive their first heart attack to
2 live long enough to acquire AF.

3
4 Today, most Americans know what cholesterol is and what their blood pressure should be and why these
5 things matter to their risk of heart disease and stroke. Back in the late 1940s and early 1950s, no one even
6 knew what a risk factor for chronic disease was. The National Heart Institute, as the National Heart,
7 Lung, and Blood Institute (NHLBI) was known then, began to support communitywide population studies
8 in Framingham, Massachusetts, and Albany, New York, to identify the general characteristics that made
9 death from heart disease or stroke a likelihood. Through these and other studies, it was discovered that
10 high blood pressure (hypertension), high blood cholesterol, smoking, diabetes, later overweight and
11 obesity, and lack of exercise were the key modifiable factors. Research in the 1950s led to the
12 development of the first drugs to control hypertension.

13
14 In 1972, NHLBI introduced the National High Blood Pressure Education Program (NHBPEP), the first
15 large-scale public outreach and education campaign for high blood pressure reduction. The NHBPEP
16 promotion of the detection, treatment, and control of high blood pressure has been credited with
17 influencing the dramatic increase in public understanding of hypertension, its role in stroke and heart
18 attack, and related declines in mortality. The percentage of Americans who were able to get their high
19 blood pressure under control through reduction of other related risk factors and through antihypertensive
20 drug therapy rose from about 16 percent in 1971-72 to about 55 percent in 1988-91, and almost all
21 Americans now have their blood pressure measured at least once every 2 years. Mean arterial blood
22 pressures have fallen by 10-12 mmHg since the advent of NHBPEP.

23
24 Research has shown that high blood cholesterol, a population risk factor, is an actual cause of heart
25 disease and has revealed that cholesterol in the bloodstream builds up in thickened patches, or
26 atherosclerotic plaques, in blood vessel walls. Research in the 1980s showed that lowering high blood
27 cholesterol reduces the risk of heart attacks and heart attack deaths. Since 1985, when the National
28 Cholesterol Education Program (NCEP) started, the percentage of Americans who have had their
29 cholesterol checked has more than doubled, from 35 percent in 1983 to more than 75 percent in 1995
30 (NHLBI Cholesterol Awareness Surveys). The intake of saturated fat, total fat and cholesterol have
31 declined in the past two decades, and mean serum cholesterol levels in adults have dropped from 213
32 mg/dL in 1978 to 203 mg/dL in 1988-94 (NHANES II and III).

33
34 These longstanding programs have radically changed the way we Americans think about our health—we
35 now eat less fat, smoke less, and have lower blood cholesterol on average, and more of us control our
36 hypertension than we did even 10 years ago. New cholesterol-lowering drugs are being tested, and
37 research on reducing heart disease risk in women after menopause has led to preventive strategies using
38 estrogen replacement therapy. However, the rates of heart disease and preventable risk factors are still
39 higher among racial and ethnic minorities and among those with less education and income. NHLBI
40 began developing nationwide mass media campaigns and community-based programs in the 1970s and
41 1980s to give these groups better access to information and programs for controlling their heart disease
42 risk factors.

43
44 Studies to test the effectiveness of therapeutic and lifestyle interventions also focus on populations at
45 particularly high risk. Obesity and sedentary lifestyles are becoming more common among all sectors of
46 the American population, including school-age children, for whom heart disease prevention efforts may
47 be most effective. Recent studies show that atherosclerosis is already present in late adolescence and
48 early adulthood, and hypertension can start in the early teens. NHLBI national education and outreach
49 campaigns for obesity and physical activity, similar to those for hypertension and cholesterol, now
50 include programs for children as well as adults.

1 Population studies and public outreach are two of the most important areas of future research. Advanced
2 technology is now allowing researchers to screen subjects noninvasively and painlessly for signs of
3 developing atherosclerosis, and eventually magnetic resonance imaging, ultrasound, ultrafast CT, and
4 other noninvasive methods may be used to determine the number of people in the population who have
5 heart disease or are at risk of developing heart disease. Although some national health data on African
6 Americans and Hispanics have been collected since the early 1980s, current data on heart disease and
7 stroke risk factors are still sparse for other minority groups, including American Indians and Alaska
8 Natives, Native Hawaiians, and Asian/Pacific Islanders. Adequate national data on all these populations
9 will enable researchers to explore interracial differences more fully.

10
11 Public outreach and community health intervention efforts, such as those that encourage people to lower
12 their high blood pressure or to get their cholesterol checked, are important parts of health care across the
13 Nation. New coalitions between health care providers and individual communities are forming to focus
14 on prevention and management of chronic cardiovascular disease throughout all stages of life. In this
15 new health care environment, emerging areas of research include the effect of socioeconomic status on
16 health and access to care; health status in rural populations, which are often at low income and education
17 levels; and quality of life as a criterion for evaluating treatment. With the knowledge gained through
18 these efforts, communities will be able to use well-tested health promotion and disease prevention and
19 early management strategies to lower their costs and begin investing in health.

20 21 **Progress Toward Year 2000 Objectives**

22
23 By 1998, only 2 of the 17 Healthy People 2000 objectives for heart disease and stroke met or exceeded
24 their targets. These were objectives 15.7 and 15.8. However, seven additional objectives (15.1, 15.5,
25 15.6, 15.9, 15.13, 15.14, and 15.17), on average or in part, achieved at least 50 percent of their targets.
26 Other objectives achieved less than 50 percent of their targets (15.2, 15.3, and 15.4), did not have a data
27 source (at all or in part) to be able to assess progress (15.4, 15.10, 15.11, 15.12, and 15.15), or did not
28 have either a target or a baseline value (15.16).
29

1 **Draft 2010 Objectives**

2
3 *Heart Disease*

- 4 **1. (Former 15.1) Reduce coronary heart disease deaths to no more than 51 per 100,000**
5 **population.** (Baseline: age-adjusted rates of 108 per 100,000 population in 1995)

6

Select Populations	1995
African American	147
American Indian/Alaska Native	76
Asian/Pacific Islander	63
Hispanic	75
White	105
Male	148
Female	75
Female with systemic lupus erythematosus	Not available
African American female with systemic lupus erythematosus	Not available

7 **Target Setting Method:** Better than the best.

8 **Data Sources:** National Vital Statistics System (NVSS) and *Health, United States, 1996-97*, CDC,
9 NCHS. Coronary heart disease defined as ICD codes 402, 410-414, and 429.2.

- 10 **2. Reduce to 25 percent the proportion of females who die within 1 year after having a heart**
11 **attack.** (Baseline: 44 percent of females died after having a heart attack in 1995)

12 **Target Setting Method:** National average.

13 **Data Source:** *Heart and Stroke Facts: 1995 Statistical Supplement*, American Heart Association.

- 14 **3. (Developmental) Increase to __ percent the proportion of the U.S. adult public, aged 20 years**
15 **and over, who is aware of the early warning symptoms and signs of a heart attack and the**
16 **importance of accessing rapid emergency care by calling 9-1-1.**

- 17 **4. (Developmental) Increase to __ percent the proportion of health care providers who instruct**
18 **their high-risk patients (those with previously diagnosed cardiovascular disease) and their**
19 **family members/significant others about the early warning symptoms and signs of a heart**
20 **attack, including the importance of having an action plan and seeking rapid emergency care by**
21 **calling 9-1-1.**

- 22 **5. Increase to 75 percent the proportion of females who are aware that cardiovascular disease**
23 **(heart disease and stroke) is the leading cause of death for all females.** (Baseline: 31 percent of
24 females surveyed in 1997 identified heart disease/heart attack/stroke as a response to the unaided
25 question: As far as you know, what is the leading cause of death for all females today?)

26 **Target Setting Method:** National average.

27 **Data Source:** American Heart Association Telephone Survey, May 1997.

- 1 **6. Reduce to 16 percent the proportion of adults with high blood pressure.** (Baseline: age-adjusted
2 prevalence rate of 23 percent for the total population aged 20-74 in 1988-94)

Select Populations	1988-94
African American, non-Hispanic male	35%
American Indian/Alaska Native male	Not available
Asian/Pacific Islander male	Not available
Hispanic male	Not available
Mexican American male	25%
White non-Hispanic male	24%
African American, non-Hispanic female	34%
American Indian/Alaska Native female	Not available
Asian/Pacific Islander female	Not available
Hispanic female	Not available
Mexican American female	22%
White, non-Hispanic female	19%
<100% of poverty threshold	Not available
100-199% of poverty threshold	Not available
≥200% of poverty threshold	Not available

3
4 **Target Setting Method:** Better than the best.

5 **Data Source:** National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

- 6 **7. (Former 15.4) Increase to at least 50 percent the proportion of people with high blood pressure**
7 **whose blood pressure is under control.** (Baseline: 24 percent controlled among people with high
8 blood pressure aged 18-74 in 1988-91)

9

Select Populations	1988-91
African American, non-Hispanic male	21%
American Indian/Alaska Native male	Not available
Asian/Pacific Islander male	Not available
Hispanic male	Not available
Mexican American male	11%
White, non-Hispanic male	19%
African American, non-Hispanic female	29%
American Indian/Alaska Native female	Not available
Asian/Pacific Islander female	Not available
Hispanic female	Not available
Mexican American female	17%
White, non-Hispanic female	28%
Male	19%
Female	28%
<100% of poverty threshold	Not available
100-199% of poverty threshold	Not available
>200% of poverty threshold	Not available
≥200% of poverty level	Not available

10
11 **Target Setting Method:** Better than the best.

12 **Data Source:** National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

- 1 **8. (Former 15.5) Increase to at least 95 percent the proportion of people with high blood pressure**
2 **who are taking action to help control their blood pressure.** (Baseline: 71 percent of people with
3 high blood pressure aged 18 and older using medication and diet in 1994)

4

Select Populations	1994
African American	Not available
African American male aged 18-34	50%
American Indian/Alaska Native	Not available
Asian/Pacific Islander	Not available
Hispanic	Not available
White	Not available
White male aged 18-34	30%

5

6 **Target Setting Method:** National average.

7 **Data Source:** National Health Interview Survey (NHIS), CDC, NCHS.

- 8 **9. (Former 15.13) Increase to at least 95 percent the proportion of adults who have had their**
9 **blood pressure measured within the preceding 2 years and can state whether their blood**
10 **pressure was normal or high.** (Baseline: 84 percent of adults aged 18 and older in 1994).

11

Select Populations	1994
African American male	80%
American Indian/Alaska Native male	Not available
Asian/Pacific Islander male	67%
Hispanic male	67%
White male	80%
African American female	90%
American Indian/Alaska Native female	88%
Asian/Pacific Islander female	83%
Hispanic female	84%
White female	89%

12

13 **Target Setting Method:** Better than the best.

14 **Data Source:** National Health Interview Survey (NHIS), CDC, NCHS.

1 **10. (Former 15.6) Reduce the mean serum cholesterol level among adults to no more than 193**
2 **mg/dL.** (Baseline: 203 mg/dL for people aged 20-74 [age-adjusted] in 1988-94)

3

Select Populations	1988-94
African American, non-Hispanic male	200
American Indian/Alaska Native male	Not available
Asian/Pacific Islander male	Not available
Hispanic male	Not available
Mexican American male	204
White, non-Hispanic male	202
African American, non-Hispanic female	203
American Indian/Alaska Native female	Not available
Asian/Pacific Islander female	Not available
Hispanic female	Not available
Mexican American female	203
White, non-Hispanic female	205
Male	202
Female	204

4

5 **Target Setting Method:** Better than the best.

6 **Data Source:** National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

7 **11. (Former 15.7) Reduce the prevalence of blood cholesterol levels of 240 mg/dL or greater to no**
8 **more than 13 percent among adults.** (Baseline: 19 percent for people aged 20-74 [age-adjusted] in
9 1988-94)

10

Select Populations	1993
African American, non-Hispanic male	16%
American Indian/Alaska Native male	Not available
Asian/Pacific Islander male	Not available
Hispanic male	Not available
Mexican American male	18%
White, non-Hispanic male	17%
African American, non-Hispanic female	20%
American Indian/Alaska Native female	Not available
Asian/Pacific Islander female	Not available
Hispanic female	Not available
Mexican American female	18%
White, non-Hispanic female	20%
Male	18%
Female	20%

11

12 **Target Setting Method:** Better than the best.

13 **Data Source:** National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

1 **12. (Former 15.14) Increase to at least 75 percent the proportion of adults who have had their**
2 **blood cholesterol checked within the preceding 5 years.** (Baseline: 66 percent of people aged 18
3 and older had their cholesterol checked within the preceding 5 years in 1993)

Select Populations	1993
African American male	58%
American Indian/Alaska Native male	45%
Asian/Pacific Islander male	56%
Hispanic male	49%
White male	64%
African American female	68%
American Indian/Alaska Native female	60%
Asian/Pacific Islander female	55%
Hispanic female	63%
White female	70%

5
6 **Target-Setting Method:** Better than the best.

7 **Data Source:** National Health Interview Survey (NHIS), CDC, NCHS.

8 **13. (Developmental) Increase to__ percent the proportions of males and females with coronary**
9 **heart disease who have their LDL cholesterol level treated to goal (less than or equal to 100**
10 **mg/dL).**

11
12 Sometimes the first indicators of a heart attack come as warning signals. Thus, it is important to know the
13 symptoms of a heart attack, which are uncomfortable pressure, fullness, squeezing, or pain in the center of
14 the chest that lasts more than a few minutes; pain spreading to the shoulders, neck, or arms; and chest
15 discomfort with lightheadedness, fainting, sweating, nausea, or shortness of breath. Not all of these signs
16 occur in every heart attack.²³ The actual diagnosis of a heart attack must be made by a physician who has
17 studied the results of patient tests. A doctor will use, as a minimum, an electrocardiogram (ECG) to
18 discover any abnormalities caused by damage to the heart and a blood test to detect abnormal levels of
19 certain enzymes in the bloodstream. In addition, the importance of time cannot be overemphasized. It is
20 essential for a heart attack patient to receive immediate treatment with clot-dissolving agents to restore
21 blood flow to the coronary artery. The sooner these drugs are given when someone is having a heart
22 attack, the better the outcome following a heart attack.

23
24 High blood pressure is known as the “silent” killer. People have high blood pressure if their systolic
25 blood pressure is 140 mm Hg or greater, their diastolic blood pressure is 90 mm Hg or greater, or they are
26 taking antihypertensive medication. Detection begins with proper blood pressure measurement, which
27 should be obtained at each health care visit. Followup measurements should be taken based on initial
28 blood pressure readings. Blood pressure readings less than 130/85 should be checked every 2 years.
29 Readings of 130/85 mm Hg or greater should be checked more frequently as established by the NHBPEP.

30
31 Approximately 50 million adult Americans have high blood pressure. The prevalence of hypertension is
32 nearly 40 percent greater in African Americans than in whites (an estimated 6.4 million African
33 Americans have the disease), and its effects are more frequent and severe. Hypertension is very common
34 in older people. Data from NHANES III show that in all Americans, aged 60 and over, elevated blood
35 pressure is found in 60 percent of non-Hispanic whites, 71 percent of non-Hispanic African Americans,

1 and 61 percent of Mexican Americans. Isolated systolic hypertension is the most common form of
2 hypertension in older Americans.

3
4 Hypertension remains a major risk factor for both heart disease and stroke, the major forms of
5 cardiovascular disease. From the 1976-80 National Health and Nutrition Examination Survey (NHANES
6 II) to the 1988-91 survey (NHANES III, phase 1), the percentage of Americans who were aware that they
7 had high blood pressure increased from 51 to 73 percent. However, among persons with hypertension,
8 treatment increased during that same period from 31 to 55 percent. The number of persons with high
9 blood pressure controlled to below 140/90 mm Hg increased from 10 percent in the NHANES II to 29
10 percent in the NHANES III, phase 1. The poor controlled rates are indications that sustained targeted
11 efforts are needed.

12
13 Unfortunately, a large proportion of Americans with hypertension are still unaware that they have high
14 blood pressure. These individuals may go undetected for years, and when evaluated their disease state
15 may be very severe. Uncontrolled hypertension is a serious problem and may have devastating
16 consequences such as end-stage renal disease. End-stage renal disease attributed to hypertension—
17 particularly in people with diabetes, African Americans, and the elderly—has increased annually during
18 the last decade, creating a major public health problem. Progressive aging of the U.S. population and
19 therapeutic advances in managing hypertension, heart attacks, and other cardiovascular conditions have
20 resulted in a higher prevalence of older adults who have survived acute cardiovascular events. These
21 persons remain at greater risk for the development of heart failure because of the synergism of pathology
22 and aging-impaired left ventricular function. Heart failure is the leading hospital diagnosis among older
23 adults. From 1979 to 1995, heart failure deaths increased 115.7 percent. In people diagnosed with heart
24 failure, sudden cardiac death occurs at 6 to 9 times the rate seen among the general population.

25
26 Clinical trials show that therapeutic interventions can improve symptoms, reduce mortality, reduce the
27 number of rehospitalizations, and improve the quality of life for older adults with heart failure. Despite
28 recent clinical practice guidelines and advocacy of these interventions, physician practice shows
29 underutilization of the recommended therapy. In fact, current clinical practice guidelines²⁴⁻²⁶ indicate that
30 patients with heart failure due to left ventricular systolic dysfunction (i.e., an ejection fraction less than 35
31 to 40 percent) should be given a trial of angiotensin-converting enzyme (ACE) inhibitors unless specific
32 contraindications exist. Contraindications include a history of intolerance or adverse reactions to these
33 agents, serum potassium greater than 5.5 mEq/L that cannot be reduced, or symptomatic hypotension.
34 The incorporation of these guidelines into clinical practice must be increased through professional
35 education of the medical community because the number of older adults with heart failure is expected to
36 double within the next 40 years.

37
38 Concerted efforts to prevent and control high blood pressure will not only reduce heart disease and stroke
39 rates, but also will reduce the incidence of end-stage renal disease and heart failure. Engaging in healthy
40 lifestyle behaviors offers the potential for preventing hypertension, has been shown to be effective in
41 lowering blood pressure, and can reduce other cardiovascular risk factors at little cost and with minimum
42 risk. Patients should be encouraged to adopt lifestyle modifications such as losing weight, if overweight;
43 eating a diet rich in fruits and vegetables and any products lower in fat, saturated fat, cholesterol, and
44 sodium; drinking alcohol in moderation if they drink alcohol; and increasing their physical activity.

45
46 Mean cholesterol levels and the prevalence of high blood cholesterol have been decreasing in the United
47 States. From 1960 to 1994, many changes in nutritional, lifestyle, and medical therapeutic factors may
48 have affected blood cholesterol. This is especially true for the 1980s, a period when extensive nutrition
49 education, health promotion and disease prevention activities, decreased consumption of high-fat foods,
50 increased use of lipid-lowering diets and drugs, increased use of postmenopausal estrogen replacement

1 therapy, and development of lower-dose oral contraceptives could have contributed to reductions in blood
2 cholesterol levels.

3
4 Despite these reductions, it is well understood that increased blood cholesterol levels, especially high
5 LDL-cholesterol, increase the risk for CHD. Conversely, lowering total cholesterol and LDL-cholesterol
6 levels reduces CHD risk. Thus, two approaches have been taken to lower blood cholesterol levels in the
7 American population. One is a clinical approach that identifies individuals at high risk who need
8 intensive intervention efforts. The second is a public health (population) approach that aims to shift the
9 distribution of cholesterol levels in the entire population to a lower range through dietary change. The
10 two approaches are complementary and together represent a coordinated strategy for reducing coronary
11 risk.

12
13 Treatment of elevated LDL-cholesterol in patients with prior CHD is important since a substantial
14 proportion of new CHD events occur in patients with established CHD, and it appears that many CHD
15 patients, both men and women, may not be getting the aggressive cholesterol-lowering therapy that is
16 warranted. Elevated blood cholesterol levels increase the risk of CHD in women. Women, in general, are
17 at lower risk for CHD than are men of the same age; nonetheless, CHD is the leading cause of death
18 among women, with one of three women dying from heart disease in their lifetimes. The prognosis after
19 myocardial infarction, after coronary bypass surgery, and after angioplasty is often worse for women than
20 for men of similar ages. Despite the magnitude of heart disease in women and the conclusive evidence
21 that women with CHD will benefit from cholesterol lowering, the proportion of women with heart disease
22 who are meeting the LDL treatment goals published by the National Cholesterol Education Program
23 (NCEP) in 1993 is low. This is also the case for men with CHD. The incorporation of these treatment
24 recommendations into general practice must be increased through further dissemination of the treatment
25 recommendations and by additional efforts at educating the medical community and patients about their
26 implementation.

27 ***Stroke***

28 **14. (Former 15.2) Reduce stroke deaths to no more than 16 per 100,000 population.** (Baseline:
29 age-adjusted rate of 27 per 100,000 population in 1995)
30

Select Populations	1995
African American male	52
American Indian/Alaska Native male	24
Asian/Pacific Islander male	31
Hispanic male	23
White male	27
African American female	40
American Indian/Alaska Native female	20
Asian/Pacific Islander female	22
Hispanic female	18
White female	23

31
32 **Target Setting Method:** Better than the best.

33 **Data Source:** National Vital Statistics System (NVSS), CDC, NCHS.

34 **15. (Developmental) Increase to __ percent the proportion of the U.S. adult public, aged 20 and**
35 **over, who is aware of the early warning symptoms and signs of a stroke (brain attack).**

1 **16. (Developmental) Increase the proportion of health care providers who counsel their high-risk**
2 **patients (those with previously diagnosed cerebrovascular disease) and their family**
3 **members/significant others about the early warning symptoms and signs of a stroke (brain**
4 **attack), including the importance of seeking rapid emergency evaluation.**
5

6 Atrial fibrillation is a controllable risk factor for stroke and heart failure. The prevalence of AF rises
7 markedly with age: 0.1 percent at age 40, about 6 percent at age 65, and 10 percent at age 80 and older.
8 This condition raises the risk of stroke fivefold. Data from the Framingham Heart Study (FHS) suggest
9 that the attributable risk of stroke caused by AF increases significantly with age, rising from 1.5 percent
10 for those aged 50 to 59 to 23.5 percent for those aged 80 to 89 years. The importance of AF persists into
11 the oldest and most stroke-prone decades while the impact of other common risk factors, e.g., high blood
12 pressure, loses significance in the oldest old. Atrial fibrillation is said to account for about 15 percent of
13 all strokes in the U.S. annually (i.e., about 75,000 cases out of a total of 500,000). AF is also responsible
14 for about 33 percent of strokes in persons over 65 years of age. About 70 percent of persons with AF are
15 between 65 and 85 years of age and most of these patients have coexisting cardiovascular disease
16 (isolated AF is uncommon). Moreover, postoperative AF is common after a coronary artery bypass graft
17 procedure or following cardiac valve replacement, especially in older persons. These data are significant
18 since heart disease and stroke remain the first and third leading causes of death, respectively, in the U.S.
19 and stroke is the leading cause of adult disability. Importantly, cardiovascular disease remains
20 responsible for the deaths of approximately 50 percent of persons aged 65 and older.

21 For patients with symptoms and signs of acute stroke, early intervention with clot-dissolving agents has
22 been shown to improve functional outcomes if patients receive treatment within 3 hours of the onset of
23 their symptoms.²⁷ Thus, early recognition of the signs and symptoms of a stroke is essential in order to
24 receive timely treatment. The warning signals of a stroke are sudden weakness or numbness of the face,
25 arm, or leg on one side of the body; sudden dimness or loss of vision, particularly in only one eye; loss of
26 speech or trouble talking or understanding speech; sudden severe, unexplained headaches; and
27 unexplained dizziness, unsteadiness, or sudden falls, especially along with any of the other symptoms.
28 Health care providers can deliver educational counseling to patients on the signs and symptoms of a
29 stroke during regular clinical visits. Through such clinical opportunities, health providers can help
30 patients know what to do when they experience these signs and symptoms. Prompt medical or surgical
31 attention to these symptoms could prevent a fatal or disabling stroke from occurring. When a stroke
32 occurs, however, there can be severe losses in mental and bodily functions—if not death. That is why
33 preventing stroke is so important. The best way to prevent a stroke from occurring is to reduce the risk
34 factors for stroke. Factors resulting from heredity or natural processes cannot be changed, but
35 environmental and lifestyle factors can be modified with a doctor's help. Controllable risk factors include
36 high blood pressure, high blood cholesterol, and cigarette smoking.
37

38 **Related Objectives From Other Focus Areas**
39

40 **Physical Activity and Fitness**

- 41 1 Leisure time physical activity
 - 42 2 Sustained physical activity
 - 43 3 Vigorous physical activity
 - 44 5 Flexibility
 - 45 6 Vigorous physical activity, grades 9-12
 - 46 7 Moderate physical activity, grades 9-12
 - 47 8 Daily school physical education
 - 48 10 School physical education quality
 - 49 11 Inclusion of physical activity in health education
- 50

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- 1 13 Worksite physical activity and fitness
2 14 Clinician counseling about physical activity
3
4 **Nutrition**
5 1 Healthy weight
6 2 Obesity in adults
7 3 Overweight and obesity in children/adolescents
8 5 Fat intake
9 6 Saturated fat intake
10 7 Vegetable and fruit intake
11 8 Grain product intake
12 9 Calcium intake
13 10 Sodium intake
14 17 Worksite nutrition education and weight management programs
15 18 Nutrition assessment and planning
16 19 Nutrition counseling
17
18 **Tobacco Use**
19 1 Adult tobacco use
20 2 Cigarette smoking during pregnancy
21 3 Adolescent tobacco use
22 4 Age at first use of tobacco
23 6 Smoking cessation
24 7 Smoking cessation during pregnancy
25 10 Advice to quit smoking
26 12 Providers advising smoking cessation
27 13 Physician inquiries about secondhand smoke
28 15 Worksite smoking policies
29 17 Enforcement of minors' access laws
30 20 Adolescent perception of harm of tobacco use
31 21 Tobacco use prevention education
32 24 State tobacco control programs
33
34 **Educational and Community-Based Programs**
35 3 Undergraduate health risk behavior information
36 5 Worksite health promotion programs
37 6 Participation in employer-sponsored health promotion activities
38 7 Patient satisfaction with health care provider communication
39 8 Patient and family education
40 9 Community disease prevention and health promotion activities
41 10 Community health promotion initiatives
42 11 Culturally appropriate community health promotion programs
43 12 Elderly participation in community health promotion
44
45 **Access to Quality Health Services**
46 A.1 Uninsured children and adults
47 A.2 Insurance coverage
48 A.3 Routine screening about lifestyle risk factors
49 A.4 Reporting on service delivery
50 A.5 Training to address health disparities
51 B.1 Source of ongoing primary care

- 1 B.4 Access to primary care providers in underserved areas
- 2 B.6 Preventable hospitalization rates for chronic illness
- 3 C.1 Access to emergency medical services
- 4 C.4 Time-dependent care for cardiac symptoms

5

6 **Public Health Infrastructure**

- 7 3 Continuing education and training by public health agencies
- 8 4 Use of Standard Occupational Classification System
- 9 5 Onsite access to data
- 10 6 Access to public health information and surveillance data
- 11 7 Tracking Healthy People 2010 objectives for select populations
- 12 8 Data collection for Healthy People 2010 objectives
- 13 9 Use of geocoding in health data systems
- 14 10 Performance standards for essential public health services
- 15 15 Data on public health expenditures
- 16 16 Collaboration and cooperation in prevention research efforts
- 17 17 Summary measures of health and the public health infrastructure

18

19 **Health Communication**

- 20 1 Public access to health information
- 21 3 Evaluation of communication programs
- 22 4 Satisfaction with health information
- 23 7 Health communication/media technology curricula

24

25 **Diabetes**

- 26 6 Cardiovascular deaths
- 27 14 End-stage renal disease
- 28 15 Lipid assessment
- 29 18 Controlled blood pressure
- 30 21 Aspirin therapy

31

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