

Heart Disease & Stroke



Statistics

Our guide to current statistics and the supplement to our
Heart & Stroke Facts



2009 Update At-A-Glance

Statistical Fact Sheets

Information for the population groups and risk factors listed below is available at americanheart.org/statistics (click on “Statistical Fact Sheets”).

POPULATIONS

African Americans and Cardiovascular Diseases
American Indians/Alaska Natives and Cardiovascular Diseases
Asian/Pacific Islanders and Cardiovascular Diseases
Baby Boomers and Cardiovascular Diseases
Hispanics/Latinos and Cardiovascular Diseases
International Cardiovascular Disease Death Rates
International Cardiovascular Disease Statistics
Men and Cardiovascular Diseases
Older Americans and Cardiovascular Diseases
Whites and Cardiovascular Diseases
Women and Cardiovascular Diseases
Youth and Cardiovascular Diseases

RISK FACTORS

Diabetes Mellitus
High Blood Cholesterol and Other Lipids
High Blood Pressure
Metabolic Syndrome
Overweight and Obesity
Physical Inactivity
Tobacco

MISCELLANEOUS

Cardiovascular Procedures
Congenital Cardiovascular Defects
Death Rates by State
Hospital Discharges for Cardiovascular Diseases
Leading Causes of Death
Nutrition and Cardiovascular Diseases
Peripheral Arterial Disease
Out-of-Hospital (Sudden) Cardiac Arrest
Understanding and Using AHA Statistics
Venous Thromboembolism

Table Of Contents

1	At-A-Glance Summary Tables:	2
	Males And Cardiovascular Diseases	2
	Females And Cardiovascular Diseases	3
	Ethnic Groups And Cardiovascular Diseases	4
	Children, Youth And Cardiovascular Diseases	5
2	Cardiovascular Diseases	6
3	Coronary Heart Disease, Acute Coronary Syndrome And Angina Pectoris	12
4	Stroke (Cerebrovascular Disease)	14
5	High Blood Pressure (And End-Stage Renal Disease)	17
6	Congenital Cardiovascular Defects	19
7	Heart Failure	20
8	Peripheral Arterial Disease	21
9	Risk Factors	22
	Physical Inactivity	22
	Smoking/Tobacco	23
	High Blood Cholesterol And Other Lipids	25
	Overweight And Obesity	26
	Diabetes Mellitus	26
10	Metabolic Syndrome	28
11	Nutrition	29
12	Quality Of Care	30
13	Medical Procedures	32
14	Economic Cost Of Cardiovascular Diseases	33
15	Glossary	34
16	Abbreviation Guide	36

About These Statistics

All statistics are for the most recent year available. Prevalence and hospitalizations are computed for 2006 unless otherwise indicated. Mortality data are final for 2005, unless otherwise indicated.

Do not compare the prevalence or incidence statistics with those in past issues of this publication. It can lead to misinterpretation of time trends.

If you have questions about statistics or any points made in this booklet, please contact the Biostatistics Program Coordinator at the American Heart Association National Center, NancyHaase@heart.org, 214-706-1423. Direct all media inquiries to News Media Relations at inquiries@heart.org or 214-706-1173.

A more complete version of this update is available on our Web site, americanheart.org/statistics.

Acknowledgment

We would like to thank the members of the American Heart Association Statistics Committee and the Stroke Statistics Subcommittee for their contributions to this publication.

Suggested Citation

American Heart Association. Heart Disease and Stroke Statistics – 2009 Update. Dallas, Texas: American Heart Association; 2009. ©2009, American Heart Association.

Diseases and Risk Factors	Both Sexes	Total Males	White Males	Black Males	Mexican-American Males
Total Cardiovascular Disease					
Prevalence 2006**	80.0 M (36.3%)	38.7 M (37.6%)	37.8%	45.9%	26.1%
Mortality 2005++	864.5 K	409.9 K	329.6 K	47.4 K	NA
Coronary Heart Disease					
Prevalence 2006 CHD**	16.8 M (7.6%)	8.7 M (8.6%)	8.8%	9.6%	5.4%
Prevalence 2006 MI**	7.9 M (3.6%)	4.7 M (4.7%)	4.9%	5.1%	2.5%
Prevalence 2006 AP**	9.8 M (4.4%)	4.3 M (4.3%)	4.1%	4.4%	3.5%
New and recurrent CHD* ##	1.26 M	740.0 K	675.0 K	70.0 K	NA
New and recurrent MI##	935.0 K	565.0 K	NA	NA	NA
Incidence AP (stable angina) #	500.0 K	320.0 K	NA	NA	NA
Mortality 2005 CHD++	445.7 K	232.1 K	203.9 K	22.9 K	NA
Mortality 2005 MI++	151.0 K	80.1 K	70.8 K	7.5 K	NA
Stroke					
Prevalence 2006**	6.5 M (2.9%)	2.6 M (2.6%)	2.3%	3.9%	2.1%
New and recurrent strokes++	795.0 K	370.0 K	325.0 K	45.0 K	NA
Mortality 2005++	143.6 K	56.6 K	47.2 K	7.5 K	NA
High Blood Pressure					
Prevalence 2006**	73.6 M (33.3%)	35.3 M (34.1%)	34.1%	44.4%	23.1%
Mortality 2005++	57.4 K	24.0 K	17.3 K	6.0 K	NA
Heart Failure					
Prevalence 2006**	5.7 M (2.5%)	3.2 M (3.2%)	3.1%	4.2%	2.1%
Mortality 2005++ ≠	292.2 K	126.2 K	112.6 K	11.3 K	NA
Tobacco					
Prevalence 2006+	47.1 M (20.8%)	26.2 M (23.5%)	23.5%	26.1%	20.1†
Blood Cholesterol					
Prevalence 2006:					
Total cholesterol ≥200 mg/dL**	98.6 M (45.1%)	45.0 M (42.6%)	42.1%	35.6%	52.1%
Total cholesterol ≥240 mg/dL**	34.4 M (15.7%)	14.6 M (13.8%)	14.3%	7.9%	17.5%
LDL cholesterol ≥130 mg/dL**	71.8 M (32.8%)	35.8 M (33.8%)	31.0%	36.2%	45.0%
HDL cholesterol <40 mg/dL**	33.9 M (15.5%)	26.3 M (24.9%)	24.9%	13.5%	30.6%
Physical Activity††					
Prevalence 2007+	30.8%	33.9%	NA	NA	NA
Overweight and Obesity					
Prevalence 2006:					
Overweight and obesity					
BMI 25.0 or higher**	145.0 M (66.7%)	76.9 M (73.0%)	72.4%	73.7%	74.8%
Obesity BMI 30.0 or higher**	74.1 M (33.9%)	34.7 M (32.7%)	32.3%	36.8%	26.8%
Diabetes Mellitus					
Prevalence 2006:					
Physician-diagnosed diabetes**	17.0 M (7.7%)	7.5 M (7.4%)	5.8%	14.9%	11.3%
Undiagnosed diabetes**	6.4 M (2.9%)	3.9 M (3.8%)	3.6%	4.7%	6.0%
Prediabetes**	57.0 M (25.9%)	34.0 M (31.7%)	32.0%	22.9%	28.5%
Incidence – Diagnosed Diabetes**	1.6 M	NA	NA	NA	NA
Mortality 2005++	75.1 K	36.5 K	29.6 K	5.7 K	NA

Note: AP = angina pectoris (chest pain); BMI = body mass index; CHD = coronary heart disease; includes heart attack, angina pectoris (chest pain) or both; CVD = cardiovascular disease; K = thousands; M = millions; MI = myocardial infarction (heart attack); mg/dL = milligrams per deciliter; () = data not available. *New and recurrent MI and fatal CHD. **Age 20+, +Age 18+, ++All Ages, #Age 45+, ##Age 35+, †Hispanic. ††Regular leisure-time physical activity. NA – Not available ≠ Total mentions.

Sources: See expanded version of the Statistical Update, at americanheart.org/statistics. For data on men in other ethnic groups, see other chapters and Statistical Fact Sheets.

Diseases and Risk Factors	Both Sexes	Total Females	White Females	Black Females	Mexican-American Females
Total Cardiovascular Disease					
Prevalence 2006**	80.0 M (36.3%)	41.3 M (34.9%)	33.3%	45.9%	32.5%
Mortality 2005++	864.5 K	454.6 K	372.2 K	52.4 K	NA
Coronary Heart Disease					
Prevalence 2006 CHD**	16.8 M (7.6%)	8.1 M (6.8%)	6.6%	9.0%	6.3%
Prevalence 2006 MI**	7.9 M (3.6%)	3.2 M (2.7%)	3.0%	2.2%	1.1%
Prevalence 2006 AP**	9.8 M (4.4%)	5.5 M (4.5%)	4.3%	6.7%	4.5%
New and recurrent CHD* ##	1.26 M	515.0 K	445.0 K	65.0 K	NA
New and recurrent MI##	935.0 K	370.0 K	NA	NA	NA
Incidence AP (stable angina)#	500.0 K	180.0 K	NA	NA	NA
Mortality 2005 CHD++	445.7 K	213.6 K	186.5 K	23.1 K	NA
Mortality 2005 MI++	151.0 K	70.9 K	61.6 K	8.0 K	NA
Stroke					
Prevalence 2006**	6.5 M (2.9%)	3.9 M (3.2%)	3.2%	4.1%	3.8%
New and recurrent strokes++	795.0 K	425.0 K	365.0 K	60.0 K	NA
Mortality 2005++	143.6 K	87.0 K	74.7 K	10.0 K	NA
High Blood Pressure					
Prevalence 2006**	73.6 M (33.3%)	38.3 M (32.1%)	30.3%	43.9%	30.4%
Mortality 2004++	57.4 K	33.3 K	25.8 K	6.7 K	NA
Heart Failure					
Prevalence 2006	5.7 M (2.5%)	2.5 M (2.0%)	1.8%	4.2%	1.4%
Mortality 2005 ++ ≠	292.2 K	166.1 K	148.6 K	14.9 K	NA
Tobacco					
Prevalence 2006+	47.1 M (20.8%)	20.9 M (18.1%)	18.8%	18.5%	10.1%†
Blood Cholesterol					
Prevalence 2006:					
Total cholesterol ≥200 mg/dL**	98.6 M (45.1%)	53.6 M (47.1%)	47.7%	41.4%	48.0%
Total cholesterol ≥240 mg/dL**	34.4 M (15.7%)	19.8 M (17.3%)	18.1%	13.4%	14.5%
LDL cholesterol ≥130 mg/dL**	71.8 M (32.8%)	36.0 M (31.7%)	33.7%	27.4%	30.3%
HDL cholesterol <40 mg/dL**	33.9 M (15.5%)	7.5 M (6.7%)	6.5%	6.1%	10.5%
Physical Activity††					
Prevalence 2007+	30.8%	28.9%	NA	NA	NA
Overweight and Obesity					
Prevalence 2005:					
Overweight and Obesity					
BMI 25.0 or higher**	145.0 M (66.7%)	68.1 M (60.5%)	57.5%	77.7%	73.0%
Obesity BMI 30.0 or higher**	74.1 M (33.9%)	39.4 M (35.0%)	32.7%	52.9%	41.9%
Diabetes Mellitus					
Prevalence 2006:					
Physician-diagnosed diabetes**	17.0 M (7.7%)	9.5 M (8.0%)	6.1%	13.1%	14.2%
Undiagnosed diabetes**	6.4 M (2.9%)	2.5 M (2.1%)	2.2%	3.1%	1.9%
Prediabetes**	57.0 M (25.9%)	23.0 M (19.9%)	18.7%	19.0%	23.6%
Incidence – diagnosed diabetes**	1.6 M	NA	NA	NA	NA
Mortality 2005++	75.1 K	38.6 K	30.1 K	7.2 K	NA

Note: AP = angina pectoris (chest pain); BMI = body mass index; CHD = coronary heart disease; includes heart attack, angina pectoris (chest pain) or both; CVD = cardiovascular disease; K = thousands; M = millions; MI = myocardial infarction (heart attack); mg/dL = milligrams per deciliter; () = data not available. *New and recurrent MI and fatal CHD. **Age 20+, +Age 18+, ++All Ages, #Age 45+, ##Age 35+, †Hispanic, ≠ Total mentions. ††Regular leisure-time physical activity. NA – Not available.

Sources: See expanded version of the Statistical Update, at americanheart.org/statistics. For data on women in other ethnic groups, see other chapters and Statistical Fact Sheets.

Diseases and Risk Factors	Both Sexes	Whites		Blacks		Mexican Americans		Hispanic/Latinos	
		Males	Females	Males	Females	Males	Females	Males	Females
Total Cardiovascular Disease									
Prevalence 2006**	80.0 M (36.3%)	37.8%	33.3%	45.9%	45.9%	26.1%	32.5%	NA	NA
Mortality 2005++	864.5 K	329.6 K	372.2 K	47.4 K	52.4 K	NA	NA	NA	NA
Coronary Heart Disease									
Prevalence 2006 CHD**	16.8 M (7.6%)	8.8%	6.6%	9.6%	9.0%	5.4%	6.3%	5.7% +	
Prevalence 2006 MI**	7.9 M (3.6%)	4.9%	3.0%	5.1%	2.2%	2.5%	1.1%	NA	NA
Prevalence 2006 AP**	9.8 M (4.4%)	4.1%	4.3%	4.4%	6.7%	3.5%	4.5%	NA	NA
New and recurrent CHD* ##	1.26 M	675.0 K	445.0 K	70.0 K	65.0 K	NA	NA	NA	NA
Mortality 2005 CHD ++	445.7 K	203.9 K	186.5 K	22.9 K	23.1 K	NA	NA	NA	NA
Mortality 2005 MI ++	151.0 K	70.8 K	61.6 K	7.5 K	8.0 K	NA	NA	NA	NA
Stroke									
Prevalence 2006**	6.5 M (2.9%)	2.3%	3.2%	3.9%	4.1%	2.1%	3.8%	2.5% +	
New and recurrent strokes++	795.0 K	325.0 K	365.0 K	45.0 K	60.0 K	NA	NA	NA	NA
Mortality 2005++	143.6 K	47.2 K	74.7 K	7.5 K	10.0 K	NA	NA	NA	NA
High Blood Pressure									
Prevalence 2006**	73.6 M (33.3%)	34.1%	30.3%	44.4%	43.9%	23.1%	30.4%	20.6%+	
Mortality 2005++	57.4 K	17.3 K	25.8 K	6.0 K	6.7 K	NA	NA	NA	NA
Heart Failure									
Prevalence 2006**	5.7 M (2.5%)	3.1%	1.8%	4.2%	4.2%	2.1%	1.4%	NA	NA
Mortality 2005 ++ ≠	292.2 K	112.6 K	148.6 K	11.3 K	14.9 K	NA	NA	NA	NA
Tobacco									
Prevalence 2006+	47.1 M (20.8%)	23.5%	18.8%	26.1%	18.5%	NA	NA	20.1%	10.1%
Blood Cholesterol									
Prevalence 2006: **									
Total cholesterol ≥200 mg/dL **	98.6 M (45.1%)	42.1%	47.7%	35.6%	41.4%	52.1%	48.0%	NA	NA
Total cholesterol ≥240 mg/dL **	34.4 M (15.7%)	14.3%	18.1%	7.9%	13.4%	17.5%	14.5%	29.9%†	
LDL cholesterol ≥130 mg/dL **	71.8 M (32.8%)	31.0%	33.7%	36.2%	27.4%	45.0%	30.3%	NA	NA
HDL cholesterol <40 mg/dL **	33.9 M (15.5%)	24.9%	6.5%	13.5%	6.1%	30.6%	10.5%	NA	NA
Physical Activity††									
Prevalence 2007+	30.8%	33.9%		22.9%		NA	NA	23.8%	
Overweight and Obesity									
Prevalence 2006:									
Overweight and obesity									
BMI 25.0 or higher**	145.0 M (66.7%)	72.4%	57.5%	73.7%	77.7%	74.8%	73.0%	67.8%	
Obesity BMI 30.0 or higher**	74.1 M (33.9%)	32.3%	32.7%	36.8%	52.9%	26.8%	41.9%	27.5%	
Diabetes Mellitus									
Prevalence 2006:									
Physician-diagnosed diabetes**	17.0 M (7.7%)	5.8%	6.1%	14.9%	13.1%	11.3%	14.2%	11.1%	
Undiagnosed diabetes**	6.4 M (2.9%)	3.6%	2.2%	4.7%	3.1%	6.0%	1.9%	NA	NA
Prediabetes**	57.0 M (25.9%)	32.0%	18.7%	22.9%	19.0%	28.5%	23.6%	NA	NA
Incidence – Diagnosed Diabetes**	1.6 M	NA	NA	NA	NA	NA	NA	NA	NA
Mortality 2005 ++	75.1 K	29.6 K	30.1 K	5.7 K	7.2 K	NA	NA	NA	NA

Note: AP = angina pectoris (chest pain); BMI = body mass index; CHD = coronary heart disease; includes heart attack, angina pectoris (chest pain) or both; CVD = cardiovascular disease; K = thousands; M = millions; MI = myocardial infarction (heart attack); mg/dL = milligrams per deciliter; () = data not available. *New and recurrent MI and fatal CHD. **Age 20+, +Age 18+, ++All Ages. ##Age 35+, †BRFSS (1997). MMWR, Vol. 49, No. SS-2, March 24, 2000. ††Regular leisure-time physical activity. NA – Not available. ≠ Total mention.

Sources: See expanded version of the Statistical Update, at americanheart.org/statistics. For data on women in other ethnic groups, see other chapters and Statistical Fact Sheets.

Diseases and Risk Factors	Both Sexes	Total		Whites		Blacks		Mexican Americans Males and Females
		Males	Females	Males	Females	Males	Females	
Congenital Cardiovascular Defects								
Mortality 2005++	3.6 K	1.9 K	1.7 K	1.6 K	1.3 K	0.3 K	0.3 K	NA
Mortality 2005 (age < 15)	2.0 K	1.1 K	0.9 K	0.8 K	0.7 K	0.2 K	0.2 K	NA
Tobacco								
Prevalence ages 12–17:								
Cigarette use past month 2006	10.4%	10.0%	10.7%	11.8%	13.0%	5.9%	6.2%	8.6%*
High school students grades 9–12:								
Current cigarette smoking 2007	20.0%	21.3%	18.7%	23.8%	22.5%	14.9%	8.4%	18.7%*
Current cigar smoking 2007	13.6%	19.4%	7.6%	22.0%	7.4%	13.2%	6.7%	16.3%*
Smokeless tobacco use 2007	7.9%	13.4%	2.3%	18.0%	2.5%	2.0%	0.5%	6.7%*
Blood Cholesterol								
Mean total cholesterol mg/dL								
Ages 4–11	165.8	165.4	166.3	166.5	165.9	166.5	165.1	162.3
Ages 12–19	160.4	156.8	164.2	154.5	165.0	161.7	162.8	158.2
Mean HDL cholesterol mg/dL								
Ages 4–11	56.3	57.4	55.3	57.5	54.9	62.2	59.2	54.5
Ages 12–19	56.3	49.8	54.7	48.2	53.8	55.3	57.7	49.8
Mean LDL cholesterol mg/dL	87.9	85.4	91.2	84.0	91.2	90.2	91.4	87.6
Physical Activity†								
Prevalence 2007 grades 9–12:#								
Met currently recommended levels of PA	34.7%	43.7%	25.6%	46.1%	27.9%	41.3%	21.0%	38.6%*
Overweight and Obesity:								
Prevalence 2006:								
Children and adolescents ages 2–19	23.4 M (31.9%)	12.3 M (32.7%)	11.1 M (31.0%)	31.9%	29.5%	30.8%	39.2%	40.8%
Students grades 9–12#	15.8%	15.1%	9.6%	15.7%	12.8%	16.6%	21.4%	18.3%*

Note: K = thousands; M = millions; mg/dL = milligrams per deciliter; overweight in children is body mass index (BMI) 95th percentile of the CDC 2000 growth chart; () = data not available. *Hispanic, ++ - All ages, †Regular leisure-time physical activity.

Sources: For more data on congenital defects, see Chapter 6, and our Statistical Fact Sheet, Congenital Cardiovascular Defects, #CDC. Youth Risk Behavior Surveillance, U.S., 2007. Surveillance Summaries, June 6, 2008. MMWR 2008;57(SS-4).

(ICD/9 390-459, 745-747) (ICD/10 I00-I99, Q20-Q28; see Glossary for details and definitions)

Prevalence

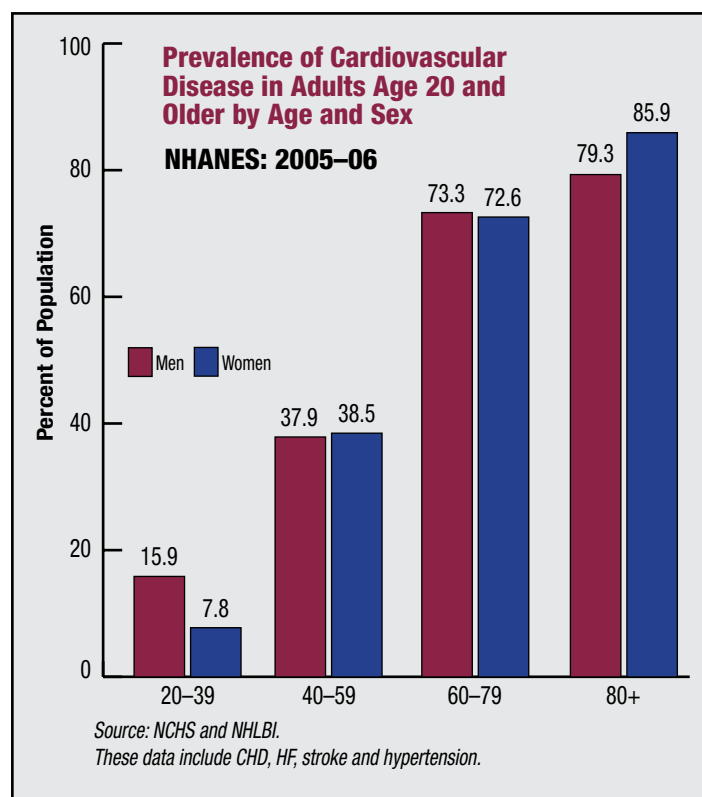
An estimated 80,000,000 American adults (one in three) have one or more types of cardiovascular disease (CVD), of whom 38,100,000 are estimated to be age 60 or older. Except as noted, the estimates were extrapolated to the U.S. population in 2006 from NHANES 2005–06 data. (Total CVD includes diseases in the bullet points below except for congenital CVD.) Due to overlap, it is not possible to add these conditions to arrive at a total.

- High blood pressure (HBP) — 73,600,000. (Defined as systolic pressure 140 mm Hg or greater and/or diastolic pressure 90 mm Hg or greater, taking antihypertensive medication or being told at least twice by a physician or other health professional that you have HBP.)
- Coronary heart disease (CHD) — 16,800,000.
 - Myocardial infarction (MI, or heart attack) — 7,900,000.
 - Angina pectoris (AP, or chest pain) — 9,800,000.
- Heart failure (HF) — 5,700,000.
- Stroke — 6,500,000.
- Congenital cardiovascular defects — 650,000–1,300,000.
- The following prevalence estimates are for people age 18 and older from NCHS NHIS, 2007: (*Vital Health Stat 10.2007[240]. Provisional report.*)
 - Among whites only, 11.4 percent have heart disease, 6.1 percent have CHD, 22.2 percent have hypertension and 2.2 percent have had a stroke.
 - Among blacks or African Americans, 10.2 percent have heart disease, 6.0 percent have CHD, 31.7 percent have hypertension and 3.7 percent have had a stroke.
 - Among Hispanics or Latinos, 8.8 percent have heart disease, 5.7 percent have CHD, 20.6 percent have hypertension and 3.7 percent have had a stroke.
 - Among Asians, 6.9 percent have heart disease, 4.3 percent have CHD, 19.5 percent have hypertension and 2.6 percent have had a stroke.
 - Among Native Hawaiians or other Pacific Islanders, 28.5 percent have hypertension (estimate may be unreliable; other prevalence estimates not available).

-Among American Indians or Alaska Natives, 10.5 percent have heart disease, 5.6 percent have CHD (estimate may be unreliable) and 25.5 percent have hypertension (stroke estimate is unavailable).

Incidence

- Based on the NHLBI's Framingham Heart Study (FHS) original and offspring cohort (1980–2003)... (*Incidence and Prevalence: 2006 Chart Book on Cardiovascular and Lung Diseases. Bethesda, Md.: National Heart, Lung, and Blood Institute, May 2006*)
 - The average annual rates of first major cardiovascular events rise from three per 1,000 men at ages 35–44 to 74 per 1,000 at ages 85–94. For women, comparable rates occur 10 years later in life. The gap narrows with advancing age.
 - Before age 75, a higher proportion of CVD events due to CHD occur in men than in women, and a higher proportion of events due to congestive heart failure (CHF) occur in women than in men.
- Data from the FHS indicate that the lifetime risk for CVD is two in three for men and more than one in two for women at age 40. (*Personal communication, Donald Lloyd-Jones, MD, Northwestern University, Chicago, Ill.*)



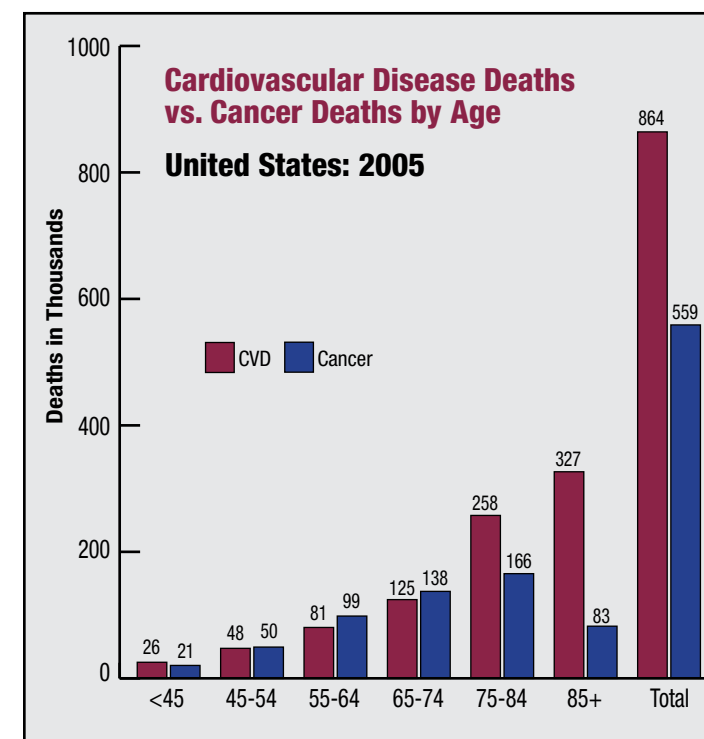
Mortality

- Final mortality data show that CVD (I00–I99, Q20–Q28) as the underlying cause of death (including congenital cardiovascular defects) accounted for 35.3 percent (864,480) of all 2,448,017 deaths in 2005, or one of every 2.8 deaths in the United States. CVD total mention deaths (1,372,000 deaths in 2005) accounted for about 56 percent of all deaths in 2005. (*NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; http://wonder.cdc.gov/mortSQL.html*)
- In every year since 1900, except 1918, CVD accounted for more deaths than any other single cause or group of causes of death in the United States. (*NCHS*)
- Nearly 2,400 Americans die of CVD each day, an average of one death every 37 seconds. CVD claims about as many lives each year as cancer, chronic lower respiratory diseases, accidents and diabetes mellitus combined. (*NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; http://wonder.cdc.gov/mortSQL.html*)
- The 2005 overall death rate from CVD (I00–I99) was 278.9. The rates were 324.7 for white males and 438.4 for black males; 230.4 for white females and 319.7 for black females. From 1995–2005, death rates from CVD (ICD/10 I00–I99) declined 26.4 percent. In the same 10-year period, actual CVD deaths declined 9.6 percent. (*NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; http://wonder.cdc.gov/mortSQL.html*)
- Other causes of death in 2005 (based on final mortality figures) — cancer, 559,312; accidents, 117,809; Alzheimer's disease, 71,599; HIV (AIDS), 12,543. (*NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; http://wonder.cdc.gov/mortSQL.html*)
- Final 2005 CVD death rates were 331.1 for males and 237.1 for females. Cancer (malignant neoplasms) death rates were 225.1 for males and 155.6 for females. Breast cancer claimed the lives of 41,116 females in 2005; lung cancer claimed 69,105. Death rates for females were 24.1 for breast cancer and 40.5 for lung cancer. One in 30 female deaths was from breast cancer, while one in six was from CHD. By comparison, one in 4.6 female deaths was of cancer while one in 2.7 was of CVD. Based on 2005 mortality, CVD caused about a death a minute among females — about 455,000 female lives in 2005. That's more female lives than were claimed by cancer, chronic lower respiratory diseases, Alzheimer's disease, accidents and diabetes combined. (*NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; http://wonder.cdc.gov/mortSQL.html*)
- Nearly 151,000 Americans killed by CVD (I00–I99) in 2005 were under age 65. In 2005, 32 percent of deaths from CVD occurred prematurely (i.e., before age 75, which is well below the average life expectancy of 77.8 years). (*NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; http://wonder.cdc.gov/mortSQL.html*)

- According to the NCHS, if all forms of major CVD were eliminated, life expectancy would rise by almost seven years. If all forms of cancer were eliminated, the gain would be three years. According to the same study, the probability at birth of eventually dying from major CVD (I00–I78) is 47 percent and the chance of dying from cancer is 22 percent. Additional probabilities are 3 percent for accidents, 2 percent for diabetes and 0.7 percent for HIV. (*U.S. Decennial Life Tables for 1989–91, Volume 1, No. 4. Eliminating Certain Causes of Death, 1989–91. NCHS, September 1999.*)

Out-of-Hospital Cardiac Arrest

- Based on data from the Resuscitation Outcomes Consortium, 294,851 emergency medical services-treated out-of-hospital cardiac arrests occur annually in the United States. (*Unpublished data, Graham Nichol, M.D., May 25, 2008.*)
- About 60 percent of unexpected cardiac deaths are treated by EMS. (*J Am Coll Cardiol. 2004;44:1268–75.*)
- On average, 31.4 percent of out-of-hospital cardiac arrests receive bystander CPR. (*Personal communication with Graham Nichol, M.D.*)
- About 80 percent of out-of-hospital cardiac arrests occur in private or residential settings. (*Circulation. 1998;97:2106–9.*)
- In 2005, 5,003 people died of unintentional choking or suffocation. (*NCHS*)

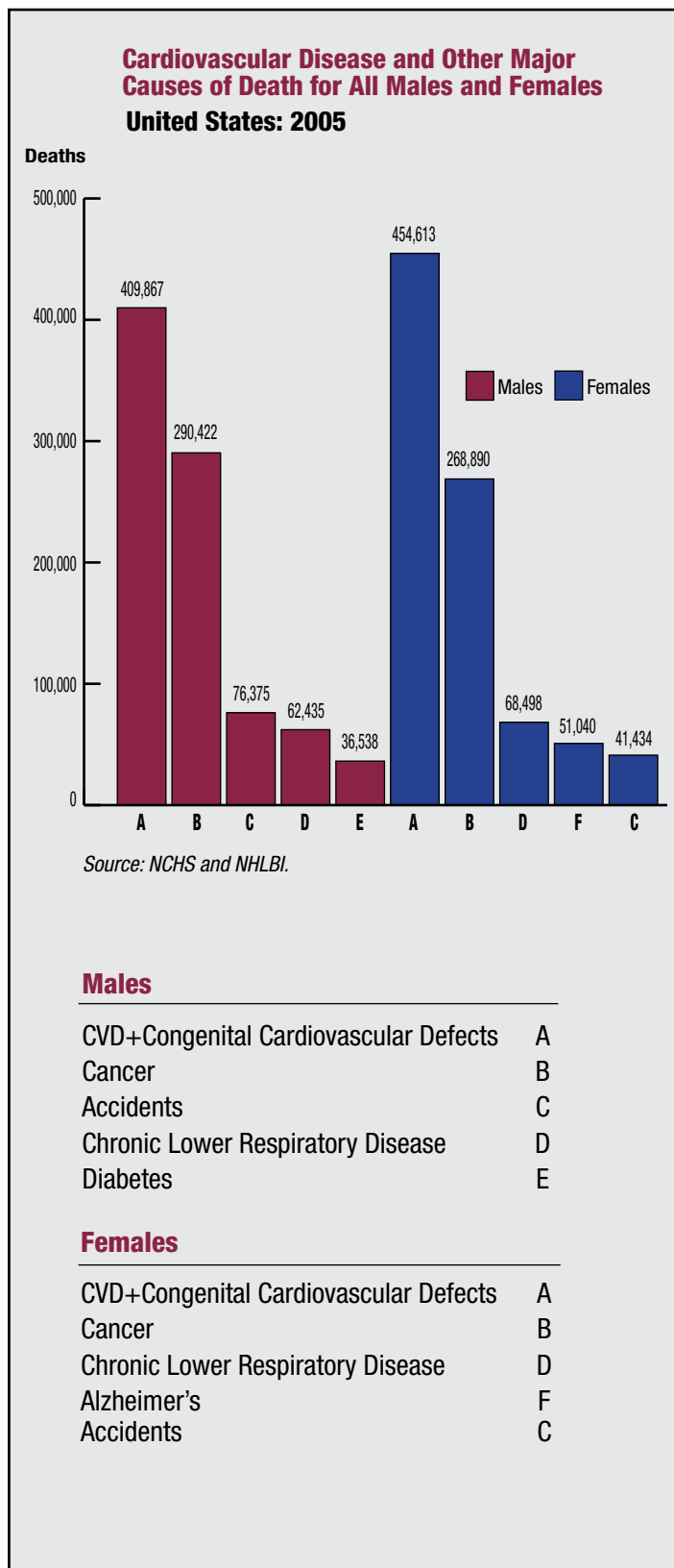


Awareness

- In 2006, 57 percent of women surveyed by the American Heart Association knew that heart disease is the leading cause of death among women. This is a significant increase in awareness compared to earlier American Heart Association surveys (in 1997, 2000 and 2003). (*J Womens Health [Larchmt]. 2007;16:68–81.*)
- In a survey of more than 800 Michigan high school students, accidents were rated as the greatest perceived lifetime health risk (39.1 percent). Nearly 17 percent selected CVD as their greatest lifetime health risk, making it the third choice after accidents and cancer. (*Eur J Cardiovasc Prev Rehabil. 2006; 13:718–723.*)

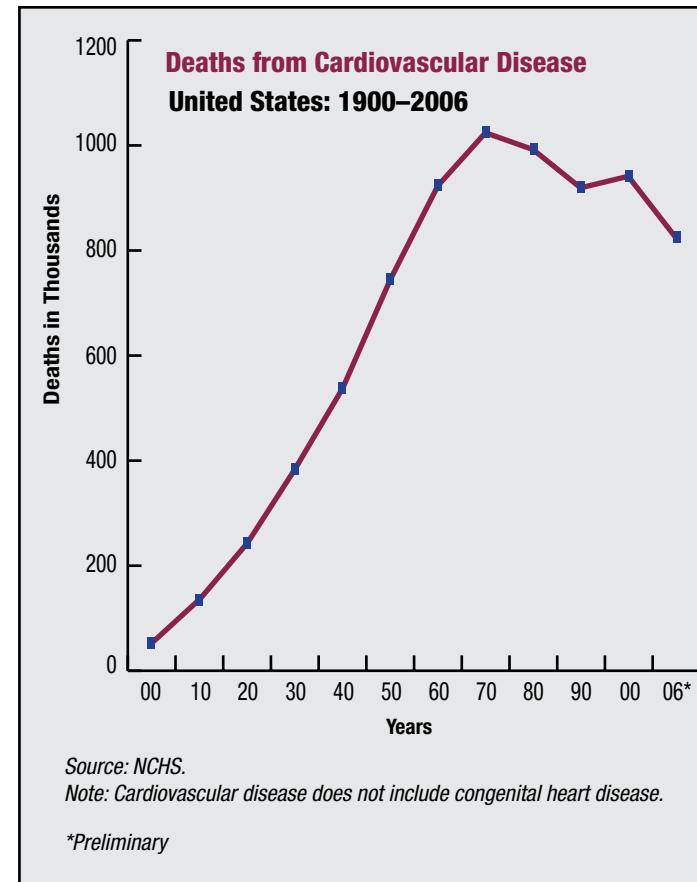
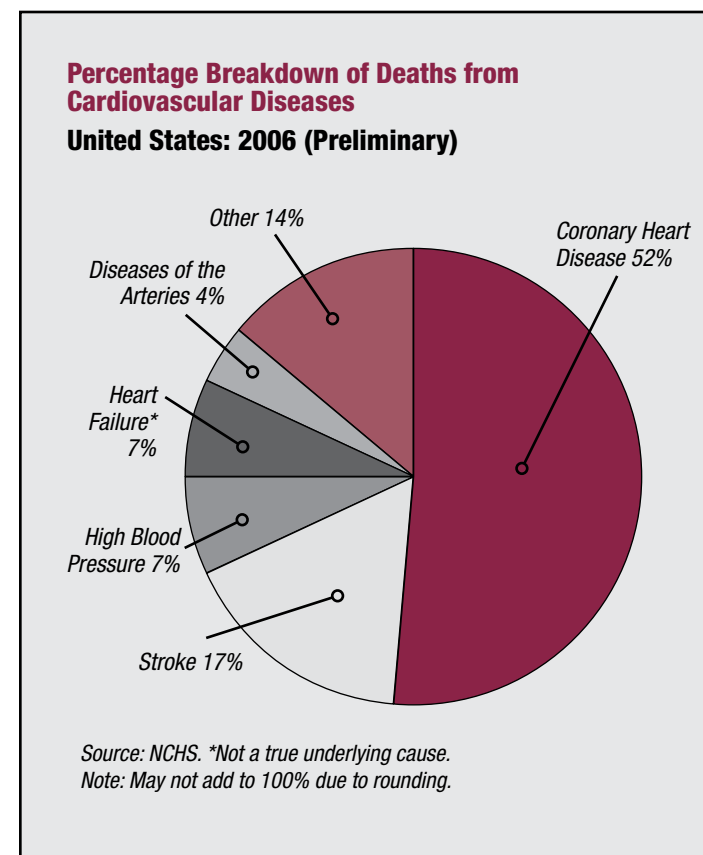
Risk Factors/Family History/Healthy Lifestyle

- In respondents ages 18–74, data from the 2000 BRFSS showed the prevalence of “healthy lifestyle characteristics” (HLC) was as follows: nonsmoking, 76.0 percent; healthy weight, 40.1 percent; five fruits and vegetables per day, 23.3 percent; and regular physical activity, 22.2 percent. The overall prevalence of the healthy lifestyle indicator (i.e., having all four HLCs) was only 3 percent, with little variation among subgroups. (*Arch Intern Med. 2005;165:854–857.*)
- According to data from the Framingham Heart Study, the occurrence of a premature atherosclerotic CVD event in a parent or sibling is associated with about a two-fold increased risk of CVD, independent of other risk factors. (*JAMA. 2004;291:2204–11; JAMA. 2005;294:3117–23.*)
- In a study of 7,900 men and women, at age 50 those with an “optimal” risk factor burden (blood pressure below 120/80 mm Hg, total cholesterol below 180 mg/dL, absence of diabetes, nonsmoker) had a median life expectancy 10 or more years longer than those with two or more major risk factors. (*Circulation. 2006;113:791–8.*)
- In people ages 70–90, eating a Mediterranean-style diet and greater physical activity are associated with 65–73 percent lower rates of all-cause mortality, as well as mortality due to CHD, CVD and cancer. (*JAMA. 2004;292:1433–1439.*)
- The NHANES II Mortality Follow-UP Study indicates that the risk for fatal CHD was 51 percent lower for men and 71 percent lower for women with none of three major risk factors (hypertension, current smoking and elevated total cholesterol ≥ 240 mg/dL) compared to those with 1 or more risk factors. (*Am J Prev Med. 2005;29:68–74.*)



Hospital Discharges/Ambulatory Care Visits/Nursing Home Visits

- From 1996–2006, the number of inpatient discharges from short-stay hospitals with CVD as the first listed diagnosis increased from 6,107,000 to 6,161,000 discharges. In 2005, CVD ranked highest among all disease categories in hospital discharges. (*2006 National Hospital Discharge Survey, National Health Statistics Reports, No. 5.*)
- In 2006, there were 72,151,000 physician office visits, hospital emergency department visits and outpatient visits with a primary diagnosis of CVD. (*NCHS, NAMCS, NHAMCS*)
- In 2006, there were 4,378,000 visits to emergency departments with a primary diagnosis of CVD. (*NCHS, NHAMCS*)
- In 2004, 24.7 percent of nursing home residents age 65 or older had a primary diagnosis of CVD at admission. This was the highest disease category for these residents. (*NCHS, NNHS*)
- In 2006, there were 6,633,000 outpatient department visits with a primary diagnosis of CVD. (*NHAMCS*)



Cost

- The estimated direct and indirect cost of CVD for 2008 is \$475.3 billion.

Operations and Procedures

- In 2006, an estimated 7,095,000 inpatient cardiovascular operations and procedures were performed in the United States; 4.0 million were performed on males and 3.1 million were performed on females. (*NHDS/NCHS and NHLBI*)

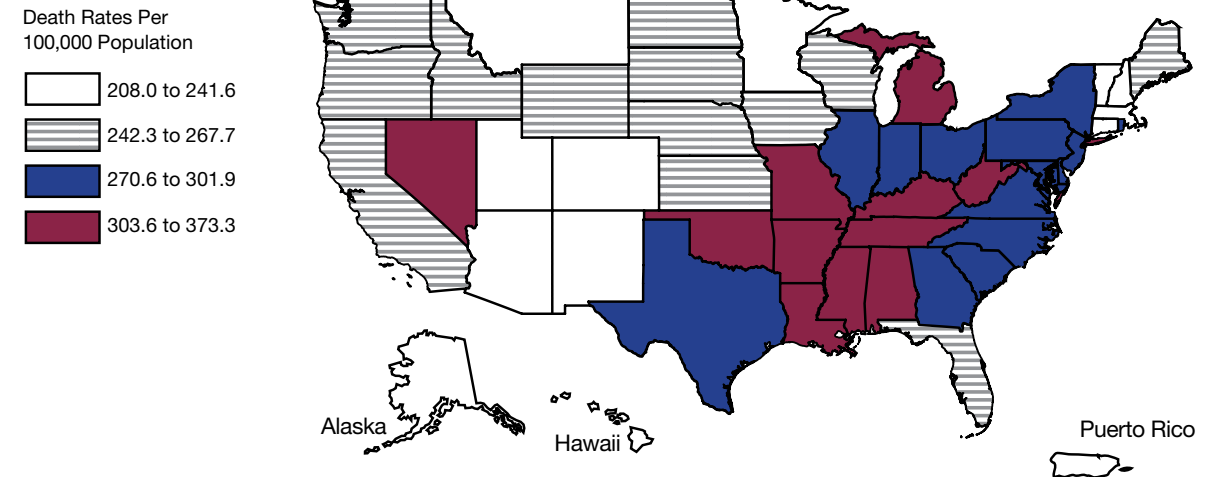
2005 Age-Adjusted Death Rates for Cardiovascular Disease (CVD), Coronary Heart Disease (CHD) and Stroke by State (includes District of Columbia and Puerto Rico)

State	CVD*			CHD**			STROKE #		
	Rank##	Death Rate	% Change+ 1994 to 2004	Rank##	Death Rate	% Change+ 1994 to 2004	Rank##	Death Rate	% Change+ 1994 to 2004
Alabama	51	349.4	-13.9	17	122.8	-29.5	52	60.9	-12.0
Alaska	6	232.8	-30.4	4	94.0	-37.5	43	53.6	-32.9
Arizona	9	235.9	-25.3	26	133.5	-28.9	8	38.6	-32.5
Arkansas	45	322.7	-20.9	46	169.4	-20.8	50	58.6	-31.5
California	26	267.7	-25.3	33	145.4	-34.3	28	47.9	-27.1
Colorado	4	231.4	-25.7	8	104.2	-33.9	12	42.0	-28.4
Connecticut	12	239.0	-33.7	13	119.0	-39.3	2	36.7	-34.5
Delaware	34	288.3	-22.5	42	161.1	-27.4	14	42.9	-21.7
District of Columbia	44	315.7	-17.4	49	180.7	11.9	7	38.5	-47.3
Florida	15	245.5	-25.9	29	139.9	-33.2	6	38.0	-29.1
Georgia	40	303.6	-24.6	12	117.0	-38.1	42	52.9	-28.8
Hawaii	3	220.5	-27.3	2	84.2	-39.0	20	46.1	-26.2
Idaho	20	248.2	-22.9	10	115.9	-32.2	41	52.5	-23.6
Illinois	32	285.4	-28.8	31	144.2	-38.7	29	48.0	-30.3
Indiana	38	298.6	-26.4	30	142.7	-35.4	35	50.8	-32.3
Iowa	25	265.8	-27.7	35	148.1	-35.6	30	48.3	-25.9
Kansas	24	264.9	-24.5	15	122.0	-33.8	33	49.4	-23.8
Kentucky	46	324.0	-22.1	43	161.1	-29.7	36	51.0	-25.6
Louisiana	49	332.4	-20.2	38	153.4	-30.4	45	56.7	-21.5
Maine	19	247.0	-30.3	16	122.7	-40.9	16	43.4	-21.2
Maryland	31	283.6	-22.7	37	152.3	-26.6	22	46.7	-26.9
Massachusetts	5	232.2	-29.3	9	109.7	-38.7	10	39.1	-24.8
Michigan	43	310.0	-26.0	45	166.4	-33.9	31	48.3	-31.4
Minnesota	1	208.0	-34.8	3	88.2	-45.3	15	42.9	-38.3
Mississippi	52	373.3	-20.4	44	162.6	-33.5	44	55.5	-22.5
Missouri	41	304.4	-24.5	40	158.5	-32.6	38	51.5	-24.1
Montana	8	235.4	-27.4	5	99.5	-35.5	27	47.8	-29.9
Nebraska	16	246.1	-32.4	6	102.0	-42.0	26	47.5	-26.0
Nevada	42	308.5	-21.0	21	124.0	-39.0	21	46.3	-25.5
New Hampshire	13	241.6	-32.0	25	130.7	-39.0	3	36.7	-42.7
New Jersey	28	271.7	-28.1	39	153.5	-33.7	5	37.8	-32.4
New Mexico	10	237.8	-23.7	18	122.8	-29.4	9	38.6	-33.2
New York	36	293.0	-29.8	52	192.8	-32.1	1	31.1	-34.7
North Carolina	33	287.0	-27.1	28	137.4	-36.4	47	57.4	-31.3
North Dakota	14	242.3	-29.5	27	135.0	-26.4	13	42.4	-30.1
Ohio	39	301.9	-25.9	41	160.3	-32.6	32	49.3	-22.8
Oklahoma	50	344.8	-15.9	51	190.8	-16.7	49	58.2	-18.0
Oregon	21	249.7	-26.6	7	104.1	-39.3	46	56.7	-30.9
Pennsylvania	35	291.6	-27.5	36	149.4	-35.3	23	47.0	-26.2
Puerto Rico¶	11	238.8	-19.5	14	121.7	-12.6	17	44.2	-17.6
Rhode Island	29	281.6	-23.7	50	186.0	-25.2	11	39.5	-33.0
South Carolina	37	296.4	-30.3	24	129.1	-40.9	48	57.6	-35.9
South Dakota	22	254.8	-28.6	32	145.0	-31.0	37	51.4	-26.3
Tennessee	48	330.2	-21.3	48	178.1	-26.9	51	60.8	-28.0
Texas	30	281.9	-23.8	34	147.0	-32.6	34	50.0	-26.2
Utah	2	220.2	-23.8	1	81.8	-42.0	19	44.5	-30.2
Vermont	7	234.5	-33.9	22	124.6	-40.0	4	37.3	-37.1
Virginia	27	270.6	-29.3	19	122.9	-34.9	40	52.3	-29.5
Washington	17	246.5	-25.2	23	125.7	-28.0	24	47.1	-31.0
West Virginia	47	327.7	-23.4	47	171.4	-31.7	39	51.8	-16.6
Wisconsin	23	257.6	-28.6	20	123.8	-37.3	25	47.3	-34.5
Wyoming	18	246.8	-25.9	11	116.9	-33.4	18	44.2	-38.1
Total United States	278.8	-27.0	144.4	-33.7	46.6	-28.3			

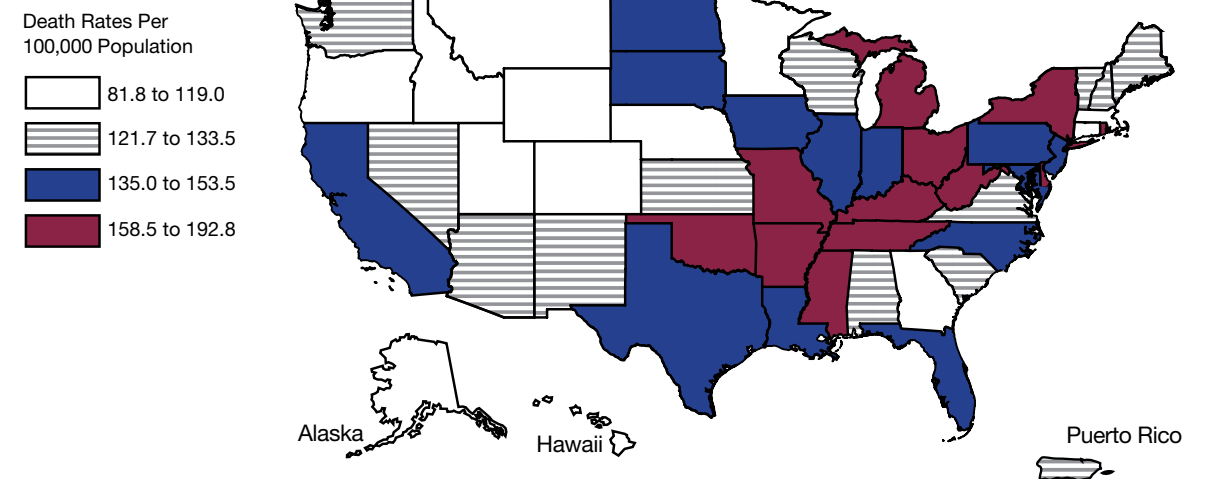
*Cardiovascular disease is defined here as ICD/10 I00-I99. **Coronary heart disease is defined here as ICD/10 I20-I25. #Stroke is defined here as ICD/10 I60-I69. ##Rank is lowest to highest. +Percent change, is based on log linear slope of rates for each year, 1994-2004. For stroke, the death rates in 1994-1998 were comparability modified, using the ICD/10 to ICD/9 comparability ratio of 1.0502. ¶Percent changes for Puerto Rico are for 1996-98 (averaged) to 2004 and are not based on a log linear slope. Source: NCHS compressed mortality file 1979-2005. Data provided by personal communication with NHLBI.

Death Rates by State – Statistics (Includes District of Columbia)

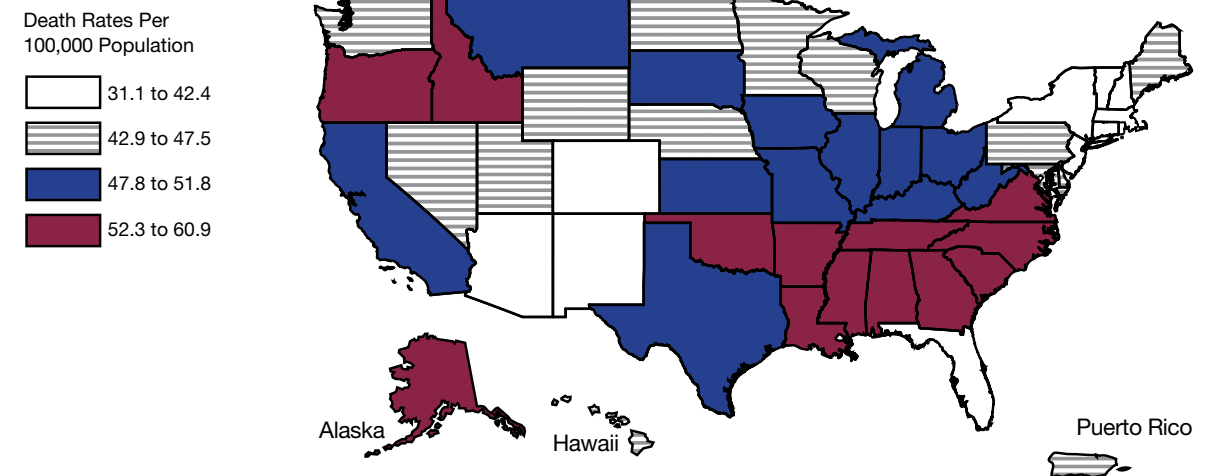
2005 Total Cardiovascular Disease Age-Adjusted Death Rates by State



2005 Coronary Heart Disease Age-Adjusted Death Rates by State



2005 Stroke Age-Adjusted Death Rates by State



3

Coronary Heart Disease, Acute Coronary Syndrome and Angina Pectoris

Coronary Heart Disease (CHD) (ICD/9 410-414, 429.2) (ICD/10 I20-I25; see Glossary for details and definitions)

Prevalence

- Among adults age 20 and older, the prevalence of coronary heart disease (CHD) in 2006 was 16,800,000 (about 8,700,000 men and 8,100,000 women).

Incidence

- This year an estimated 785,000 Americans will have a new coronary attack and about 470,000 will have a recurrent attack. It is estimated that an additional 195,000 silent heart attacks occur each year. (NHLBI: Based on unpublished data from the ARIC and CHS studies.)
- The estimated annual incidence of heart attack (myocardial infarction, MI) is 610,000 new attacks and 325,000 recurrent attacks annually. (NHLBI: Based on unpublished data from the ARIC and CHS studies.)
- The average age of a person having a first heart attack is 64.5 for men and 70.3 for women. (NHLBI: Based on unpublished data from the ARIC and CHS studies.)
- Based on the NHLBI's Framingham Heart Study (FHS)...
 - CHD makes up more than half of all cardiovascular events in men and women under age 75. (Hurst's *The Heart, Arteries and Veins*. 10th ed. New York, NY: McGraw-Hill, 2001: 3–7.)
 - The lifetime risk of developing CHD after age 40 is 49 percent for men and 32 percent for women. (Lancet. 1999;353:89–92.)

Mortality

- CHD caused about one of every five deaths in the United States in 2005. It is the largest single killer of American males and females. (NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; <http://wonder.cdc.gov/mortSQL.html>)
- Final 2005 CHD mortality was 445,687 (232,115 males, 213,572 females). CHD total mention mortality in 2005 was 607,000 (see glossary for definition of "total mention" mortality). (Vital Statistics of the United States, NCHS.)
- Final 2005 MI mortality was 151,004 (80,079 males, 70,925 females). MI total mention mortality in 2004 was 191,000 (see glossary for definition of "total mention" mortality). (Vital Statistics of the United States, NCHS.)
- About every 25 seconds, an American will suffer a coronary event, and about every minute someone will die from one. (AHA computation based on latest available mortality data.)

- About every 34 seconds, an American will suffer a heart attack. (AHA computation based on latest available mortality data.)
- About 82 percent of people who die of CHD are age 65 or older. (AHA computation based on latest available mortality data.)
- From 1995–2005, the death rate from CHD declined 34.3 percent but the actual number of deaths declined only 19.4 percent. (NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; <http://wonder.cdc.gov/mortSQL.html>)
- The final overall 2005 CHD death rate was 144.4 per 100,000 population. Death rates were 187.7 for white males and 213.9 for black males; for white females, the rate was 110.0, and for black females it was 140.9. (NCHS. Compressed mortality file: underlying cause of death, 1979 to 2005; <http://wonder.cdc.gov/mortSQL.html>)
- Final 2005 CHD death rates were 118.0 for Hispanics or Latinos, 96.2 for American Indians or Alaska Natives, and 81.0 for Asians or Pacific Islanders. (Health, United States, 2007. With chartbook on trends in the health of Americans. Hyattsville, Md.: National Center for Health Statistics, 2007.)
- The estimated average number of years of life lost due to a heart attack is 15. (Natl Vital Stat Rep.2008;56[10]:1–20.)
- A recent study of the decrease in U.S. deaths from CHD from 1980 to 2000 found that about 47 percent of the decrease was attributable to evidence-based medical therapies and 44 percent to changes in risk factors. Nevertheless, these improvements have been offset by increases in body mass index and diabetes prevalence. (N Engl J Med. 2007;356:2388–2398.)

Risk Factors

- A study of men and women in three prospective cohort studies found that about 90 percent of CHD patients have prior exposure to at least one of the following major risk factors: high total blood cholesterol levels, or current medication with cholesterol-lowering drugs, hypertension, or current medication with blood pressure-lowering drugs, current cigarette use, and clinical report of diabetes. (JAMA. 2003;290:891–897.)
- According to a case-control study of 52 countries (INTERHEART), nine easily measured and potentially modifiable risk factors account for over 90 percent of the risk of an initial acute MI. The effect of these risk factors is consistent in men and women across different geographic regions and by ethnic group, making the study applicable worldwide. These nine risk factors include cigarette smoking, abnormal blood lipid levels, hypertension, diabetes, abdominal obesity, a lack of physical activity, low daily fruit and vegetable consumption, alcohol overconsumption and psychosocial index. (Lancet. 2004;364:937–952.)

Aftermath

- Depending on their gender and clinical outcome, people who survive the acute stage of a heart attack have a chance of illness and death that's 1.5–15 times higher than that of the general population. (Hurst's *The Heart, Arteries and Veins*. 10th ed. New York, NY: McGraw-Hill, 2001: 3–7.)
- Based on pooled data from the FHS, ARIC and CHS studies of the NHLBI, within one year following a first MI:
 - at age 40 and older, 18 percent of men and 23 percent of women will die
 - at ages 40–69, 8 percent of white men, 12 percent of white women, 14 percent of black men and 11 percent of black women will die
 - at age 70 and older, 27 percent of white men, 32 percent of white women, 26 percent of black men and 28 percent of black women will die
 - in part, because women have heart attacks at older ages than men do, they're more likely to die from them within a few weeks.

Within five years following a first MI:

- at age 40 and older, 33 percent of men and 43 percent of women will die
- at ages 40–69, 15 percent of white men, 22 percent of white women, 27 percent of black men and 32 percent of black women will die
- at age 70 and older, 50 percent of white men, 56 percent of white women, 56 percent of black men and 62 percent of black women will die.

Hospital Discharges/Ambulatory Care Visits

- From 1996–2006, the number of inpatient discharges from short-stay hospitals with CHD as the first listed diagnosis decreased from 2,263,000 to 1,760,000. (NHDS/NCHS.)

Cost

- The estimated direct and indirect 2009 cost of CHD is \$165.4 billion.

Operations and Procedures (Hospital Inpatients)

- In 2006, an estimated 1,313,000 inpatient percutaneous coronary intervention procedures, 448,000 inpatient bypass procedures, 1,115,000 inpatient diagnostic cardiac catheterizations, 114,000 inpatient implantable defibrillators and 418,000 pacemaker procedures were performed in the United States. (Natl Health Stat Rep.2008;5:1–20.)

Acute Coronary Syndrome (ICD/9 Codes 410, 411)

The term "acute coronary syndrome" (ACS) is increasingly used to describe patients who present with either acute MI or unstable angina

(UA). (UA is chest pain or discomfort that usually occurs while at rest. The discomfort may be more severe and prolonged than typical angina.)

- A conservative estimate for the number of discharges with ACS from hospitals in 2006 is 733,000. Of these, an estimated 401,000 are male and 332,000 are female. This estimate is derived by adding the first-listed inpatient hospital discharges for MI (647,000) to those for UA (86,000). (NHDS, NCHS)

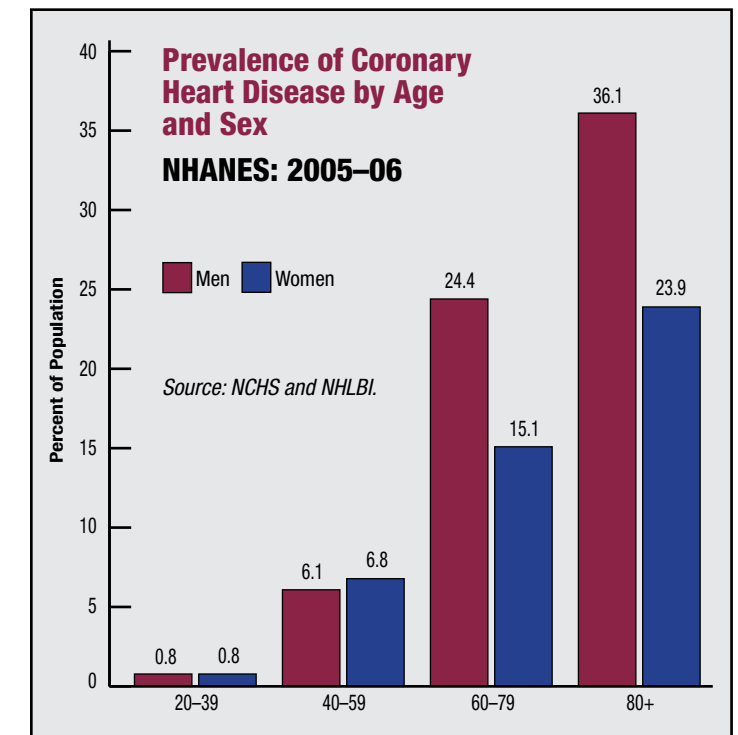
Angina Pectoris (ICD/9 413) (ICD/10 I20)

Incidence

- Only 18 percent of coronary attacks are preceded by longstanding angina. (NHLBI computation of Framingham Heart Study follow-up since 1986.)
- The annual rates per 1,000 population of new episodes of angina for non-black men are 28.3 for ages 65–74, 36.3 for ages 75–84, and 33.0 for age 85 and older. For non-black women in the same age groups, the rates are 14.1, 20.0 and 22.9, respectively. For black men, the rates are 22.4, 33.8 and 39.5, and for black women, the rates are 15.3, 23.6 and 35.9, respectively. (Incidence and Prevalence: 2006 Chart Book on Cardiovascular and Lung Diseases. Bethesda, Md.: National Heart, Lung, and Blood Institute, May 2006.)

Mortality

A small number of deaths due to CHD are coded as being from AP. These are included as a portion of total deaths from CHD.



4 Stroke

(ICD/9 430-438) (ICD/10 I60-I69)

Prevalence

- Among adults age 20 and older, the prevalence of stroke in 2005 was 6,500,000 (about 2,600,000 males and 3,900,000 females).

Incidence

- Each year about 795,000 people experience a new or recurrent stroke. About 600,000 of these are first attacks, and 185,000 are recurrent attacks. (GCNKSS, NINDS, NHLBI)
- On average, every 40 seconds someone in the United States has a stroke. (AHA computation based on latest available data.)
- Each year, about 55,000 more women than men have a stroke. (GCNKSS, NINDS.)
- Men's stroke incidence rates are greater than women's at younger ages but not at older ages. The male/female incidence ratio is 1.25 at ages 55–64; 1.50 for ages 65–74; 1.07 at 75–84 and 0.76 at 85 and older. (ARIC and CHS studies.)
- Blacks have almost twice the risk of first-ever stroke compared with whites. The age-adjusted stroke incidence rates at ages 45–84 are 6.6 per 1,000 population in black males, 3.6 in white males, 4.9 in black females and 2.3 in white females (NHLBI. *Incidence and Prevalence: 2006 Chart Book on Cardiovascular and Lung Diseases.*)
- The Brain Attack Surveillance in Corpus Christi project (BASIC) clearly demonstrated an increased incidence of stroke among Mexican Americans compared with non-Hispanic whites. The crude cumulative incidence was 168/10,000 in Mexican Americans and 136/10,000 in non-Hispanic whites. Specifically, Mexican Americans have an increased incidence of intracerebral hemorrhage and subarachnoid hemorrhage compared with non-Hispanic whites, as well as an increased incidence of ischemic stroke and TIA at younger ages. (Am J Epidemiol. 2004;160:376-383.)
- Of all strokes, 87 percent are ischemic, 10 percent are intracerebral hemorrhage, and 3 percent are subarachnoid hemorrhage. (GCNKSS, NINDS)

Mortality

Stroke accounted for about one of every 17 deaths in the United States in 2005. Stroke mortality for 2005 was 143,579 (56,586 males, 86,993 females). Stroke total mention mortality in 2005 was about 242,000 (see glossary for definition of "total mention mortality"). (NHLBI; NCHS public use data file.)

- When considered separately from other cardiovascular diseases, stroke ranks No. 3 among all causes of death, behind diseases of the heart and cancer. (NCHS mortality data.)
- On average, every three to four minutes someone dies of a stroke. (NCHS, NHLBI)
- Among people ages 45–64, 8 to 12 percent of ischemic strokes and 37 to 38 percent of hemorrhagic strokes result in death within 30 days, according to the ARIC study of the NHLBI. (Stroke. 1999;30:736-743.)
- From 1995–2005, the stroke death rate fell 29.7 percent and the actual number of stroke deaths declined 13.5 percent. (NCHS, CDC. *Compressed Mortality File: Underlying Cause of Death*; <http://wonder.cdc.gov/mortSQL.html>)
- The 2005 final death rate for stroke was 46.6 per 100,000. Death rates were 44.7 for white males and 70.5 for black males; 44.0 for white females and 60.7 for black females. (NCHS, CDC. *Compressed Mortality File: Underlying Cause of Death*; <http://wonder.cdc.gov/mortSQL.html>) Death rates were 38.0 for Hispanic or Latino males and 33.5 for females; 41.5 for Asian or Pacific Islander males and 36.3 for females; and 31.3 for American Indian/Alaska Native males and 37.1 for females. (NCHS. *Health, United States, 2007.*)
- Because women live longer than men and stroke occurs at older ages, more women than men die of stroke each year. Women accounted for 60.6 percent of U.S. stroke deaths in 2004. (AHA computation based on latest mortality data.)

Stroke Risk Factors

- The risk of ischemic stroke in current smokers is about double that of nonsmokers after adjustment for other risk factors. (FHS, CHS, HHS, NHLBI)
- Atrial fibrillation (AF) is an independent risk factor for stroke, increasing risk about five-fold. (Stroke. 1991;22:983–988.)
- High blood pressure is the most important risk factor for stroke. (Stroke. 1997;28:1840-1844.) Subjects with blood pressure lower than 120/80 mm Hg have about half the lifetime risk of stroke compared to subjects with high blood pressure. (Stroke. 1991;22:983–88; JAMA. 2003; 290:1049–56.)
- A study of over 37,000 women age 45 and older participating in the Women's Health Study suggests that a healthy lifestyle consisting of abstinence from smoking, low BMI, moderate alcohol consumption, regular exercise and healthy diet was associated with a significantly reduced risk of total and ischemic stroke but not of hemorrhagic stroke. (Arch Intern Med. 2006;166:1403–1409.)
- The risk of ischemic stroke or intracerebral hemorrhage during pregnancy and the first six weeks postpartum was 2.4 times greater than for nonpregnant women of similar age and race, according to the Baltimore–Washington Cooperative Young Stroke Study. (N Engl J Med. 1996;335:768–774.)
- Among postmenopausal women, the Women's Health Initiative primary prevention clinical trial found that estrogen plus progestin (PremPro) increased ischemic stroke risk by 44 percent, with no effect on hemorrhagic stroke. (JAMA. 2003;289:2673–2684.)
- In the Framingham Heart Study, among participants younger than age 65, the risk of stroke was 4.21 times higher in subjects with symptoms of depression. (Stroke. 2007;38:16–21.)

Physical Activity and Stroke Prevention

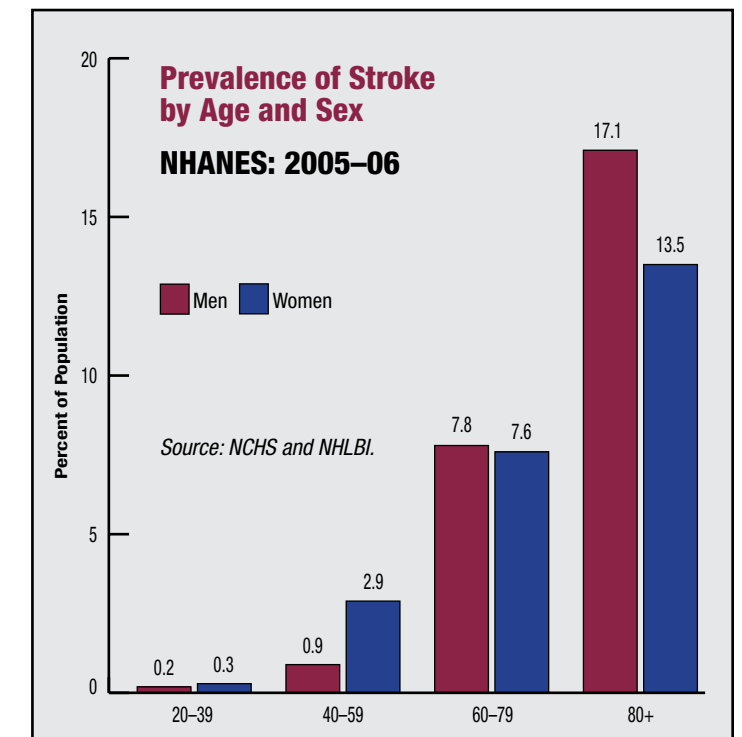
- Physical activity reduces stroke risk. Results from the Physicians' Health Study showed a lower stroke risk associated with vigorous exercise among men (RR of total stroke = 0.86 for exercise five times a week or more). The Harvard Alumni Study showed a decrease in total stroke risk in men who were highly physically active (RR = 0.82). (Stroke. 1999;30:1–6.)
- In an evaluation of walking and sports participation in 73,265 men and women in Japan, risk of stroke death was reduced by 29 percent and 20 percent, respectively, in those pertaining to the highest-intensity category. (J Am Coll Cardiol 2005;46:1761–1767.) In a study of 47,721 men and women in Finland, significant trends toward lower stroke risk were associated with moderate and high levels of leisure-time physical activity and active commuting. (Stroke. 2005;36:1994–1999.) A meta-analysis of reports of 31 observational studies conducted mainly in the United States and Europe found that moderate and high levels of leisure-

time and occupational physical activity protected against total stroke, hemorrhagic stroke and ischemic stroke. (Int J Epidemiol. 2004;33:787–798.)

- The Northern Manhattan Study (NOMAS) — which included white, black and Hispanic men and women in an urban setting — showed a decrease in ischemic stroke risk associated with physical activity levels across all racial/ethnic and age groups and for each gender (odds ratio = 0.37). (Stroke. 1998;29:380–387.)

Awareness of Stroke Warning Signs and Risk Factors

- According to 2005 BRFSS data in 14 states, 38.1 percent of respondents were aware of five stroke warning signs and would first call 9-1-1 if they thought someone was having a heart attack or stroke. (MMWR Morb Mortal Wkly Rep. 2008;57:481–5.)
- Spanish-speaking Hispanics are less likely to know all stroke symptoms, and far less likely to know all heart attack symptoms, than English-speaking Hispanics, non-Hispanic blacks and non-Hispanic whites. (Am J Prev Med. 2006;30:189–196.)
- In the Reasons for Geographic and Racial Differences in Stroke Study (REGARDS/NINDS), black participants were more aware than whites of their hypertension and more likely to be undergoing treatment if aware of their diagnosis, but among those treated for hypertension, they were less likely than whites to have their blood pressure controlled. (Stroke. 2006;37:1171–8.)
- A study of patients who have had a stroke found that only 60.5 percent were able to identify one stroke risk factor and only 55.3 percent were able to identify one stroke warning sign. (Heart Lung. 2007;36:25–34.)



Aftermath

- Stroke is a leading cause of serious, long-term disability in the United States. (*SIPP; MMWR Morb Mortal Wkly Rep. 2001;50:120-125.*)
- Based on pooled data from the FHS, ARIC and CHS studies of the NHLBI:

The percent who die one year following a first stroke:

- at age 40 and older, 21 percent of men and 24 percent of women.
- at ages 40–69: 14 percent of white men, 20 percent of white women, 19 percent of black men and 19 percent of black women.
- at age 70 and older: 24 percent of white men, 27 percent of white women, 25 percent of black men and 22 percent of black women.

The median survival time (in years) following a first stroke is:

- at ages 60–69: 6.8 for men and 7.4 for women.
- at ages 70–79: 5.4 for men and 6.4 for women.
- at age 80 and older: 1.8 for men and 3.1 for women.

- After stroke, women have greater disability than men. A Michigan-based stroke registry found that 33 percent of women had moderate-to-severe disability at discharge compared with 27 percent of men. In an analysis of 108 stroke survivors from the Framingham Heart Study, 34 percent of women were disabled six months after their stroke compared to 16 percent of men. (*Stroke. 2003;34:1581–5; Stroke. 2007;38:2541–8.*)

Hospital Discharges/ Ambulatory Care Visits

- From 1996–2006, the number of inpatient discharges from short-stay hospitals, with stroke as the first listed diagnosis declined from 956,000 to 889,000. This decrease was observed in adults age 65 and older. (*NHDS/NCHS.*)
- 2006 data from the Hospital Discharge Survey of the NCHS showed the average length of stay for discharges with stroke as the first-listed diagnosis was 4.9 days. (*2006 National Hospital Discharge Survey. National Health Statistics Reports, No. 5.*)

Cost

- The estimated direct and indirect cost of stroke for 2009 is \$68.9 billion.
- The mean lifetime cost of ischemic stroke in the United States is estimated at \$140,048. This includes inpatient care, rehabilitation and follow-up care necessary for lasting deficits. (*All numbers converted to 1999 dollars using the medical component of CPI. (Stroke. 1996;27:1459–1466.)*)

Stroke in Children

- Compared to the stroke risk of white children, black children have a higher relative risk of 2.12, Hispanics have a lower relative risk of 0.76, and Asians have a similar risk. Boys have a 1.28-fold higher risk of stroke than girls. There are no ethnic differences in stroke severity or case-fatality, but boys have a higher case-fatality rate for ischemic stroke. (*Neurology. 2003;61:189–194.*)
- Cerebrovascular disorders are among the top 10 causes of death in children, with rates highest in the first year of life. Stroke mortality in children younger than age 1 has remained the same over the last 40 years. (*Neurology. 2006;67:1390–95.*)

Transient Ischemic Attack (TIA)

(A TIA is a mini-stroke that lasts less than 24 hours.)

- The prevalence of transient ischemic attacks (TIA) increases with age. (*Cerebrovasc Dis. 1996;6[suppl 1]:26–33.*)
- About 15 percent of strokes are preceded by a TIA. (*Cerebrovasc Dis. 1996;6[suppl 1]:26–33.*)
- About half of patients who experience a TIA fail to report it to their healthcare providers. (*Neurology. 2003;60:1429–1434.*)
- After TIA, the 90-day risk of stroke is 3–17.3 percent, highest within the first 30 days. (*Stroke. 2004;35:1842–6; Stroke. 2005;36:720–3; BMJ. 2004;328:326; Neurology. 2003;60:1429–34.*)
- Within a year of TIA, up to a quarter of patients will die. (*Neurology. 2004;62:S20–S21, Stroke. 2005;36:720–3.*)
- People who have a TIA have a 10-year stroke risk of 18.8 percent. (*J Neurol Neurosurg Psychiatry. 2003;74:577–80.*)

High Blood Pressure (and End-Stage Renal Disease)

5

(ICD/9 401–404) (ICD/10 I10–I15)

Prevalence

The estimated 2005 prevalence for high blood pressure (HBP) was 73,600,000 (35,300,000 males, 38,300,000 females). HBP is defined as:

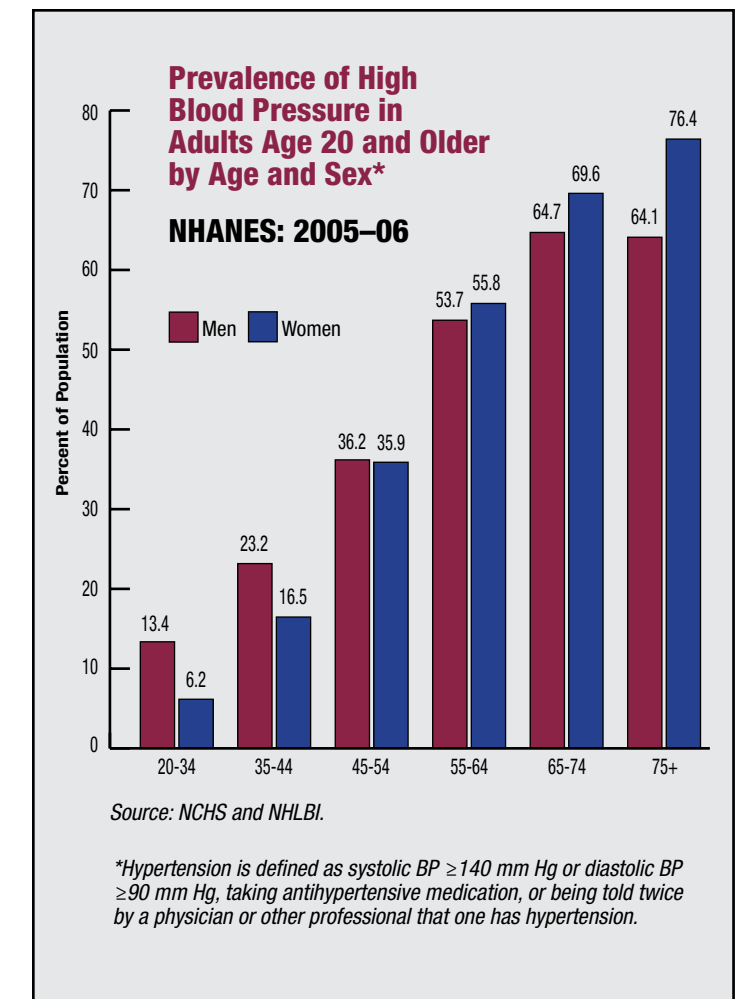
- untreated systolic pressure of 140 mm Hg or higher, or diastolic pressure of 90 mm Hg or higher or taking antihypertensive medicine
- or being told at least twice by a physician or other health professional that you have HBP. (*NCHS/NHLBI. NHANES 2005–06.*)
- One in three U.S. adults has HBP. (*Hypertension. 2004;44:398–404.*)
- A higher percentage of men than women have HBP until age 45. From ages 45–54 and 55–64, the percentage of men and women is similar. After that, a much higher percentage of women have HBP than men. (*Health, United States, 2007.*)
- HBP is two to three times more common in women taking oral contraceptives, especially in obese and older women, than in women not taking them. (*Hypertension. 2003;42:1206–1252.*)

- From 1963 to 1988, trends in prehypertension and high blood pressure among children and adolescents (ages 8 to 17) trended downward. After 1988, the trend moved upward. From 1988 to 1999, in this age group, prehypertension increased 2.3 percent and high blood pressure increased 1 percent. (*Circulation. 2007;116:1488–1496.*)

Race/Ethnicity and HBP

- The prevalence of HBP in blacks in the United States is among the highest in the world, and it is increasing. From 1988–94 to 1999–2002, the prevalence of HBP increased from 35.8 percent to 41.4 percent among black adults, and it was particularly high among black women (44.0 percent). Prevalence among whites also increased, from 24.3 percent to 28.1 percent. (*Arch Intern Med. 2005;165:2098–2104.*)
- Compared with whites, blacks develop HBP earlier in life and their average blood pressures are much higher. As a result, compared with whites, blacks have a 1.3-times greater rate of nonfatal stroke, a 1.8-times greater rate of fatal stroke, a 1.5-times greater rate of heart disease death and a 4.2-times greater rate of end-stage kidney disease. (*JNC 5 and 6*)

- Among blacks, rates of high blood pressure vary substantially. Those with the highest rates are more likely to be middle-aged or older, less educated, overweight or obese, physically inactive, and to have diabetes. (*Arch Intern Med. 2005;165:2098–2104; Prev Med. 2002;35:303–312.*)
- Some studies suggest that Hispanic Americans have rates of HBP that are similar to or lower than those of non-Hispanic white Americans. According to NHIS surveys of 2000 to 2002, black Hispanics were at slightly greater risk of HBP than white Hispanics. (*Arch Intern Med. 2002;162:2565–71.*)
- According to a CDC analysis of death certificate data from 1995 to 2002, among Hispanics, Puerto Rican Americans had the highest hypertension-related death rate (154.0) and Cuban Americans had the lowest (82.5). (*MMWR Morb Mortal Wkly Rep. 2006;55:177–180.*)



Mortality

In 2005, HBP mortality was 57,356 (24,046 males, 33,310 females). HBP total mention mortality was about 319,000 (see glossary for definition of “total mention mortality”). (NCHS and NHLBI)

- From 1995–2005, the age-adjusted death rate from HBP increased 25.2 percent and the actual number of deaths rose 56.4 percent (1995 rate modified by appropriate comparability ratio). (NCHS and NHLBI)
- The 2005 overall death rate from HBP was 18.4. Death rates were 15.8 for white males, 52.1 for black males, 15.1 for white females and 40.3 for black females. (NCHS Compressed Mortality File: underlying causes of death, 1979 to 2005; <http://wonder.cdc.gov/mortSQL.html>)

Aftermath

- About 69 percent of people who have a first heart attack, 77 percent who have a first stroke, and 74 percent with congestive heart failure have blood pressure higher than 140/90 mm Hg. (NHLBI unpublished estimates from ARIC, CHS and FHS Cohort and Offspring Studies.)
- Data from the NHLBI’s Framingham Heart Study indicate that HBP is associated with shorter overall life expectancy as well as shorter life expectancy free of cardiovascular disease (CVD) and more years lived with CVD. At age 50, total life expectancy is 5.1 years longer for men with normal blood pressure, and 4.9 years longer for women with normal blood pressure, than in those with hypertension. (Hypertension. 2005;46:280–286.)

Awareness and Control

- Data from NHANES 2005–06 showed that of those with hypertension age 20 and older, 78.7 percent were aware of their condition, 69.1 percent were under current treatment, 45.4 percent had it under control and 54.6 percent did not have it controlled. (NCHS and NHLBI.)
- Analysis of NHANES/NCHS data from 1999–2004 through 2005–06 revealed substantial increases in awareness and treatment of hypertension. Control rates increased in both sexes, non-Hispanic blacks and Mexican Americans. (NCHS. Hypertension Awareness, Treatment and Control: Continued Disparities in Adults, United States, 2005–06. NCHS Data Brief No. 3, 2008.)

Cost

- The estimated direct and indirect cost of HBP for 2009 is \$73.4 billion.

Prehypertension

- “Prehypertension” is untreated systolic pressure of 120–139 mm Hg, or untreated diastolic pressure of 80–89 mm Hg, and not being told on two occasions by a doctor or other health professional that you have hypertension.
- Based on NHANES 2005–06 data, it is estimated that about 25 percent of the U.S. population age 20 and older has prehypertension, including 32,400,000 men and 21,200,000 women. Other published sources give a higher estimate – 37 percent – based on different study inclusion criteria. (NCHS. Hypertension Awareness, Treatment and Control: Continued Disparities in Adults, United States, 2005–06. NCHS Data Brief No. 3, 2008.)
- In a study of NHANES 1999–2000, people with prehypertension were 1.65 times more likely to have above-normal cholesterol levels, overweight/obesity or diabetes, than those with normal blood pressure levels. (Arch Intern Med. 2004;164:2113–2118.)

End-Stage Renal Disease (ESRD)

(ICD/10 N18.0)

ESRD (also called end-stage kidney disease) is a condition that is most commonly associated with diabetes and/or high blood pressure, and occurs when the kidneys can no longer function normally on their own.

- The incidence of reported ESRD has increased about 40 percent in the past 10 years. (U.S. Renal Data System. 2007 Annual Data Report: Atlas of Chronic Kidney Disease and End-Stage Renal Disease in the United States.)
- According to data from the U.S. Renal Data System, in 2005:
 - 106,912 new cases of ESRD were reported.
 - 85,790 patients died from ESRD.
 - More than 17,400 kidney transplantations were performed.
- CVD is the leading cause of death for those with ESRD, and CVD mortality is five to 30 times higher in dialysis patients than in subjects from the general population. (Circulation. 2003;108:2154–2169; Am J Kidney Dis. 2006;48:392–401.)
- Diabetes is the most common cause of ESRD, followed by hypertension and glomerulonephritis. From 1994 to 2004, these three conditions accounted for 80 percent of all cases of ESRD. (MMWR Morb Mortal Wkly Rep. 2007;56:253–256.)
- As of 2005, the total annual cost of treating ESRD in the United States was about \$33 billion. (MMWR Morb Mortal Wkly Rep. 2008;57:309–12.)

Congenital Cardiovascular Defects

6

(ICD/9 745–747) (ICD/10 Q20–Q28)

Congenital cardiovascular defects, also known as congenital heart defects, are structural problems arising from abnormal formation of the heart or major blood vessels. Common complex defects include:

- tetralogy of Fallot (9–14 percent)
- transposition of the great arteries (10–11 percent)
- atrioventricular septal defects (4–10 percent)
- coarctation of the aorta (8–11 percent)
- hypoplastic left heart syndrome (4–8 percent)
- ventricular septal defects (VSDs), the most common defect. Many close spontaneously, but VSDs still account for 14–16 percent of defects requiring an invasive procedure within the first year of life.

Prevalence

- As of 2002, the prevalence of congenital cardiovascular disease in the United States was estimated to range from 650,000 to 1.3 million. (Am Heart J. 2004;147:425–439.)
- From 1940 to 2002, about 2 million patients with congenital cardiovascular defects were born in the United States. (Am Heart J. 2004;147:425–439.)
- Currently, no measured data are available to estimate the prevalence of congenital cardiovascular defects in U.S. adults.

Incidence

- Nine defects per 1,000 live births, or 36,000 infants, are expected per year in the United States. (Surgery of Congenital Heart Disease: Pediatric Cardiac Care Consortium 1984–1995. Armonk, NY: Futura Publishing Co; 1998:20.)
- Some studies suggest that as many as 5 percent of newborns, or 200,000 per year, are born with tiny muscular ventricular septal defects, almost all of which close spontaneously. These defects nearly never require treatment. (J Am Coll Cardiol. 1995;26:1545–1548; Arch Dis Child Fetal Neonatal Ed. 1999;81:F61–F63.)

Mortality

- In 2005, mortality from congenital cardiovascular defects was 3,637. Total mention mortality (see glossary for definition of “total mention mortality”) from congenital cardiovascular defects was 5,510.
- Congenital cardiovascular defects are the most common cause of infant death from birth defects; more than 30 percent of infants who die from a birth defect have a heart defect. (NVSS Final Data for 2005.)

- The 2005 death rate for congenital cardiovascular defects was 1.2. Death rates were 1.3 for white males, 1.4 for black males, 1.1 for white females and 1.4 for black females. Crude infant death rates (under 1 year) were 39.0 for white infants and 47.7 for black infants. (Centers for Disease Control and Prevention. Compressed Mortality File: Underlying Cause of Death, 1979–2005; <http://wonder.cdc.gov/mortSQL.html>)
- In 2005, 192,000 life-years were lost before age 55 due to deaths from congenital cardiovascular defects. This is more than the life years lost from leukemia, prostate cancer and Alzheimer’s disease combined. (Centers for Disease Control and Prevention. Compressed Mortality File: Underlying Cause of Death, 1979–2005; <http://wonder.cdc.gov/mortSQL.html>)
- From 1995–2005, death rates for congenital cardiovascular defects declined 42.1 percent, while the actual number of deaths declined 27.3 percent.

Congenital Cardiovascular Defects

Population Group	Estimated Prevalence All Ages	Incidence in Infants	Mortality 2005	Hospital Discharges 2006 All Ages
Both sexes	650,000 to 1.3 million	36,000	3,637	70,000
Males	–	–	1,931 (54.1%)*	30,000
Females	–	–	1,706 (45.9%)*	40,000
White males	–	–	1,564	–
White females	–	–	1,320	–
Black males	–	–	291	–
Black females	–	–	309	–

Note: (–) = data not available. *These percentages represent the portion of total congenital cardiovascular mortality that is for males vs females. Sources: Mortality: NCHS (these data represent underlying cause of death only; data for white and black males and females include Hispanics). Hospital discharges: NHDS, NCHS; data include inpatients discharged alive, dead, or status unknown.

Hospitalizations/Cost

- In 2004, birth defects accounted for more than 139,000 hospitalizations, representing 47.4 stays per 100,000 persons. Hospital costs for these conditions were \$2.6 billion. (Healthcare Cost and Utilization Project [HCUP] Statistical Brief #24: Hospitalizations for Birth Defects, 2004. Rockville, Md.: Agency for Healthcare Research and Quality, 2007.)
- According to 2003 data from the Healthcare Cost and Utilization Project 2003 Kids’ Inpatient Database, the most expensive average neonatal hospital charges were for hypoplastic left heart (\$199,597) and common truncus arteriosus (\$192,781). Coarctation of the aorta and transposition of the great arteries were also associated with costs above \$150,000. (MMWR Morb Mortal Wkly Rep. 2007;56:25–29.)

7 Heart Failure

(ICD/9 428) (ICD/10 I50)

Prevalence

- Estimated 2006 prevalence in adults age 20 and older: 5,700,000 (3,200,000 males, 2,500,000 females).

Incidence

- Data from the NHLBI's Framingham Heart Study indicate that (*Circulation. 2002;106:3068-3072*). . .
 - Heart failure (HF) incidence approaches 10 per 1,000 population after age 65.
 - Seventy-five percent of HF cases have antecedent hypertension.
 - At age 40, the lifetime risk of developing HF for both men and women is one in five.
 - At age 40, the lifetime risk of HF occurring without antecedent heart attack is one in nine for men and one in six for women.
 - The lifetime risk doubles for people with blood pressure (BP) greater than 160/90 mm Hg compared to those with BP less than 140/90 mm Hg.

- A study conducted in Olmsted County, Minnesota, showed that the incidence of HF (ICD9/428) has not declined during two decades, but survival after onset has increased overall, with less improvement among women and elderly persons. (*JAMA. 2004;292:344-350*.)

Risk Factors

- Data from the Framingham Heart Study indicate that hypertension is a very common risk factor for HF that has contributed to a large proportion of heart failure cases among the study's participants. (*JAMA. 1996;275:1557-1562*.)
- A study of the predictors of HF among women with coronary heart disease found that diabetes was the strongest risk factor. (*Circulation. 2004;110:1424-1430*.)
- The prevalence of diabetes is increasing among older persons with HF, and diabetes is a significant independent risk factor for death in these individuals. Mayo Clinic researchers found that the odds of having diabetes for those first diagnosed with HF in 1999 was nearly four times higher than for those diagnosed 20 years earlier. (*Am J Med. 2006;119:591-599*.)

Mortality

In 2005, HF total mention mortality was 292,214 (see glossary for definition of "total mention mortality"). HF was listed as the underlying cause (see glossary for definition of "underlying cause") in 58,933 of those deaths. (*NCHS and NHLBI*)

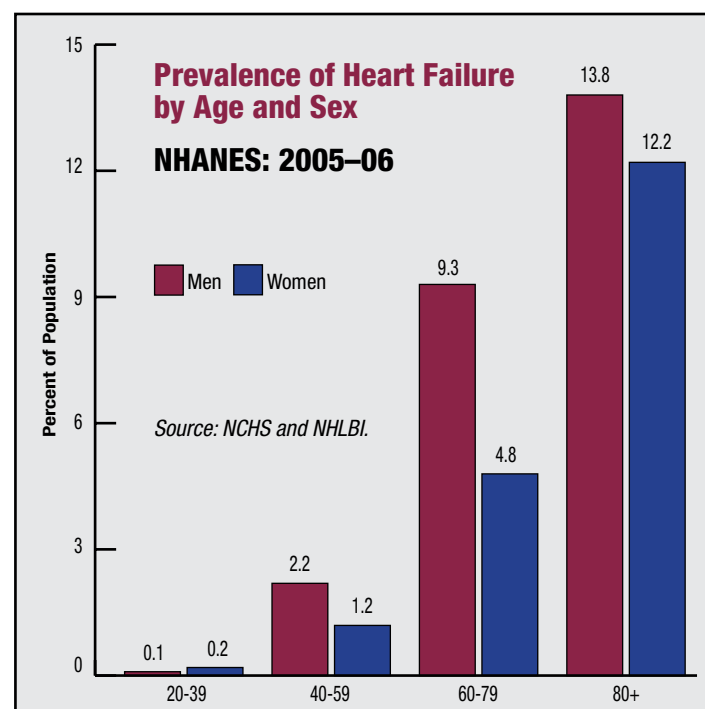
- Based on the 44-year follow-up of the NHLBI's Framingham Heart Study and 20-year follow-up of the offspring cohort:
 - Eighty percent of men and 70 percent of women under age 65 who have HF will die within 8 years.
 - After HF is diagnosed, survival is poorer in men than in women, but less than 15 percent of women survive more than 8-12 years. The one-year mortality rate is high, with one in five dying.
 - In people diagnosed with HF, sudden cardiac death occurs at six to nine times the rate of the general population.
- The 2005 overall total mention death rate for HF was 52.3 per 100,000 population. Total mention death rates were 62.1 for white males, 81.9 for black males, 43.2 for white females and 58.7 for black females. (*NCHS and NHLBI*)
- One in eight deaths has HF mentioned on the death certificate. The number of "total mention" deaths from HF was about as high in 1995 (287,000) as it was in 2005 (292,000). (*NCHS, NHLBI*)

Hospital Discharges

- Hospital discharges for HF rose from 877,000 in 2006 to 1,106,000 in 2006, an increase of 171 percent. (*Unpublished data from NHDS 2006, NCHS*.)

Cost

- The estimated direct and indirect cost of HF in the United States for 2009 is \$37.2 billion.



Peripheral Arterial Disease (PAD)

8

Peripheral arterial disease (PAD) affects about 8 million Americans and is associated with significant morbidity and mortality. (*JAMA. 2001;286:1317-1324*.)

- PAD prevalence increases dramatically with age and disproportionately affects blacks. (*Circulation. 2004;110:738-743*.)
- Most studies suggest that PAD prevalence is similar between men and women. (*J Vasc Surg. 2007; Suppl S:S5-S67*.)
- PAD affects 12-20 percent of Americans age 65 and older. (*J Am Geriatr Soc. 2007;55:583-589*.) Despite its prevalence and cardiovascular risk implications, only 20 to 30 percent of PAD patients are undergoing treatment. (*JAMA. 2006;295:180-189*.)
- In the general population, only about 10 percent of persons with PAD have the classic symptoms of intermittent claudication (intermittent leg pain). About 40 percent do not complain of leg pain, while the remaining 50 percent have a variety of leg symptoms different from classic claudication. (*JAMA. 2001;286:1317-1324; JAMA. 2001;286:1599-1606*.) However, in an older, disabled population of women, as many as two-thirds of individuals with PAD had no leg symptoms associated with exercise or exertion. (*Circulation. 2000;101:1007-1012*.)
- Intermittent claudication is present in less than 1 percent of individuals under age 50 and approximately 5 percent or more in those over age 80. (*Circulation. 2006 Mar 21;113[11]:e463-e654*.)
- The risk factors for PAD are similar to those for coronary heart disease, although diabetes and cigarette smoking are particularly strong risk factors for PAD. (*Circulation. 2006 Mar 21;113(11):e463-654*.)
- Persons with PAD have impaired function and quality of life. This is true even for persons who do not report leg symptoms. Furthermore, PAD patients, including those who are asymptomatic, experience significant decline in lower extremity functioning over time. (*Ann Intern Med. 2002;136:873-883; JAMA. 2004;292:453-461*.)

- High blood levels of lead and cadmium may increase the risk of PAD, according to data from the NHANES 1999-2000 of the NCHS. Exposure to these two metals is possible through cigarette smoke. The risk was 2.8 for high levels of cadmium and 2.9 for high levels of lead. The odds ratio of PAD for current smokers was 4.13 compared to people who had never smoked. (*Circulation. 2004;109:3196-3201*.)

For more statistics on PAD and other cardiovascular diseases, including arrhythmia, diseases of the arteries, bacterial endocarditis, cardiomyopathy, rheumatic fever/rheumatic heart disease, valvular heart disease, and venous thromboembolism, please visit our Web site, at www.americanheart.org/statistics.

- The prevalence of PAD in persons of Hispanic origin is similar to or slightly higher than in Caucasians, according to available evidence. (*Circulation. 2005;112:2703-2707; Am J Prev Med. 2007;32:328-333*.)
- Among patients with PAD, higher levels of daily physical activity are associated with better overall survival and a lower risk of death from cardiovascular disease. (*Circulation. 2006;114:242-248*.)
- In a telephone survey of more than 2,500 adults age 50 and older, 26 percent of respondents said they were familiar with PAD. Of these respondents, half were not aware that diabetes and smoking increase the risk of PAD. One in four knew that PAD is associated with increased risk of heart attack and stroke. Awareness levels were lower in respondents with lower income and education levels. (*Circulation. 2007;116:2086-2094*.)

Physical Inactivity

Prevalence

Youth

- According to the 2007 YRBS survey of students in grades 9–12, 31.8 percent of females and 18 percent of males did not engage in 60 minutes of moderate-to-vigorous physical activity even once in the previous seven days (despite recommendations that children do so five or more days per week). (*MMWR Surveill Summ. 2008;57:1-131.*)
 - Rates of inactivity were highest among black (42.1 percent) and Hispanic (35.2 percent) females, compared with white females (28.2 percent).
- 61.5 percent of children ages 9–13 don't participate in any organized physical activity during their nonschool hours, and 22.6 percent don't engage in any free-time physical activity, according to 2002 data from the Youth Media Campaign Longitudinal Study (YMCLS) of the CDC. Non-Hispanic black and Hispanic children are significantly less likely than non-Hispanic white children to report involvement in organized activities, as are children with parents who have lower incomes and education levels. (*MMWR Morb Mortal Wkly Rep. 2003;52:785–8.*)
- By the age of 16 or 17, 31 percent of white girls and 56 percent of black girls report no habitual leisure-time activity. (*N Engl J Med. 2002;347:709–15.*)
 - Lower levels of parental education are associated with greater decline in activity for white girls at both younger and older ages. For black girls, this association is seen only at the older ages.
 - Cigarette smoking is associated with decline in activity among white girls. Pregnancy is associated with decline in activity among black girls but not among white girls.
 - A higher BMI is associated with greater decline in activity among girls of both races.
- According to the 2007 YRBS survey of students in grades 9–12, more than one-fourth of all students spent three or more hours per day using computers outside of school time (24.9 percent) or watching television (35.4 percent). (*MMWR Surveill Summ. 2008;57:1–131.*)

Adults

- The 2007 prevalence of regular leisure-time physical activity among adults age 18 and older is 30.8 percent (males, 33.9 percent; females, 28.9 percent).
- According to 2007 BRFSS/CDC data, 49.5 percent of adults age 18 and older engage in 30 or more minutes of moderate physical activity five or more days per week, or engage in more than 20 minutes of vigorous physical activity three or more days per week. Levels ranged from 38.6 percent in Louisiana to 60.8 percent in Alaska. (*Behavioral Risk Factor Surveillance System. Prevalence and trends data, physical activity, 2007.*)
 - Women (66.3 percent) were more likely than men (56.0 percent) to report never engaging in vigorous physical activity.
 - Of the 11.4 percent of adults who engaged in vigorous physical activity five or more days per week, the proportion was higher among men (13.1 percent) than women (9.8 percent).
 - A lack of vigorous leisure-time physical activity was inversely associated with educational attainment: 83.6 percent, 72.7 percent, 61.3 percent and 46.4 percent of respondents with less than a high school education, a high school diploma, some college or a bachelor's degree or higher, respectively, reported no vigorous leisure-time physical activity.

Physical Activity and Coronary Heart Disease

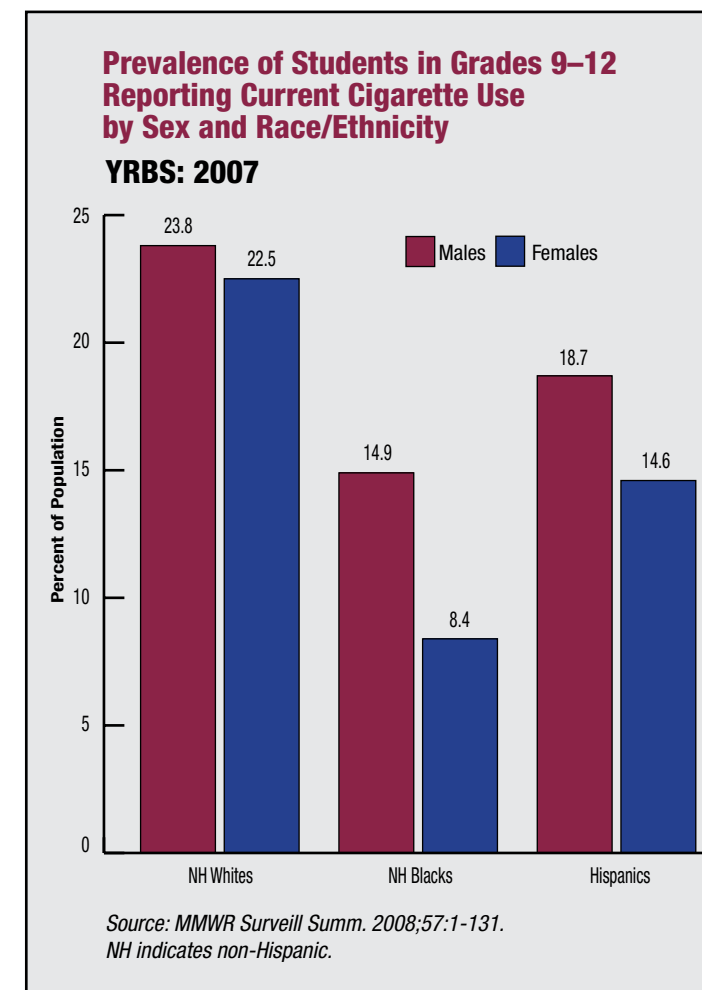
- The relative risk of coronary heart disease associated with physical inactivity ranges from 1.5–2.4, an increase in risk comparable to that observed for high blood cholesterol, high blood pressure or cigarette smoking. (*JAMA. 1995;273:402–407.*)
- A study of over 72,000 female nurses indicates that moderate-intensity physical activity, such as walking, is associated with a substantial reduction in risk of total and ischemic stroke. (*JAMA. 2000;283:2961–2967.*)
- Physical inactivity is responsible for 12.2 percent of the global burden of heart attack. (*Lancet. 2004;364:937–52.*)

Smoking

Prevalence

Youth

- In 2007, in grades 9–12, 21.3 percent of male students and 18.7 percent of female students reported current tobacco use, 19.4 percent of males and 7.6 percent of females reported current cigar use, and 13.4 percent of males and 2.3 percent of females reported current smokeless tobacco use. (*MMWR Surveill Summ. 2008;57:1–131.*)
- From 1980–2006, the percentage of high school seniors who smoked in the past month decreased 29.2 percent. This percentage decreased by 16.4 percent in males, 39.8 percent in females, 20.3 percent in whites and 56.3 percent in blacks. (*NCHS; Health, United States, 2007.*)
- Among youths ages 12–17 in 2006, 3.3 million (12.9 percent) used a tobacco product in the past month, and 2.6 million (10.4 percent) used cigarettes. The rate of cigarette use in the past month declined from 13.0 percent in 2002 to 10.4 percent in 2006. (*Results from the 2006 National Survey on Drug Use and Health: National Findings. Rockville, Md.: Substance Abuse and Mental Health Services Administration, 2007.*)



- Results from the 2007 Monitoring the Future survey of the NIH showed a considerable drop in lifetime, past-month and daily smoking among eighth graders. From 2006 to 2007, it dropped from 4 percent to 3 percent, down from its 10.4 percent peak in 1996. (*National Institute on Drug Abuse. Monitoring the Future Study, 2007.*)
- Data from the YRBS among high school students indicate that (*YRBS: National Trends in Risk Behaviors; www.cdc.gov/HealthyYouth/yrbs/trends.htm*):
 - The percentage of students ever trying cigarettes declined from 70.4 percent in 1999 to 50.3 percent in 2007.
 - The percentage who smoked in the prior 30 days declined from 36.4 percent in 1997 to 20 percent in 2007.
 - The percentage who smoked on at least 20 of the prior 30 days declined from 16.8 percent in 1999 to 8.1 percent in 2007.
 - The percentage of current tobacco users (cigarettes, cigars, smokeless tobacco) declined from 43.5 percent in 1997 to 25.7 percent in 2007.

Adults

- In 2005, the prevalence for smoking (age 18+) was 47,100,000 (26,200,000 males; 20,900,000 females). This represents 20.8 percent of the adult population. (*NCHS*)
- From 1965 to 2006, smoking in the United States has declined by 50.4 percent among people age 18 and older. (*NCHS*)
- In 2007, among Americans age 18 and older, 22.0 percent of men and 17.5 percent of women were cigarette smokers, putting them at increased risk of heart attack and stroke. (*National Health Interview Survey, 2007.*)
- Use of any tobacco product in 2005 was 31.2 percent for non-Hispanic whites only, 28.4 percent for non-Hispanic blacks only, 41.7 percent for non-Hispanic American Indians or Alaska Natives only, 14.6 percent for non-Hispanic Asians only and 24.5 percent for Hispanics or Latinos of any race. (*Health, United States, 2007.*)
- 2007 BRFSS/CDC data showed that among adults age 18 and older in all U.S. states, the median percentage of current smokers was 19.8 percent. The highest percentage was in Kentucky (28.2 percent) and the lowest was in Utah (11.7 percent). (*www.cdc.gov/brfss/*)

Incidence

- In 2007, 1 million people started smoking cigarettes daily in the United States within the prior 12 months. Of these, 40.7 percent (about 0.4 million) were younger than age 18. (*Results from the 2006 National Survey on Drug Use and Health: National Findings. Rockville, Md.: Substance Abuse and Mental Health Services Administration, 2007.*)
- About 80 percent of people who use tobacco begin before age 18, according to a report from the Surgeon General, "Preventing Tobacco Use Among Young People, 1994." The most common age of initiation is 14–15.

Mortality

- From 1997–2001, an estimated 438,000 Americans died each year of smoking-related illnesses, and 34.7 percent of these deaths were related to cardiovascular disease. (*MMWR Morb Mortal Wkly Rep.* 2005;54[25]:625–628.)
- On average, male smokers die 13.2 years earlier than male nonsmokers and female smokers die 14.5 years earlier than female nonsmokers. (*The Health Consequences of Smoking: A Report of the Surgeon General, 2004.* www.cdc.gov/tobacco/sgr/sgr_2004/index.htm)
- From 1997–2001, smoking annually caused 3.3 million years of potential life lost for men and 2.2 million years for women; smoking during pregnancy resulted in an estimated 523 male and 387 female infant deaths annually. (*MMWR Morb Mortal Wkly Rep.* 2005;54[25]:625–628.)

- Cigarette smoking results in a two-to-three-fold risk of dying from CHD. (*Tobacco-Related Mortality, Fact Sheet.* www.cdc.gov/tobacco/factsheets/Tobacco_Related_Mortality_factsheet.htm.)
- Cigarette smoking kills an estimated 178,000 women in the United States annually. (*DHHS. Fact Sheet: Women and Tobacco.* Updated 2006.)

Secondhand Smoke

- Data from *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General* (2006) indicate:
 - Nonsmokers exposed to secondhand smoke at home or at work increase their risk of heart disease by 25 to 30 percent.
 - Almost 60 percent of children ages 3–11 (almost 22 million) are exposed to secondhand smoke.
 - Short exposures to secondhand smoke can cause blood platelets to become stickier, damage the lining of the blood vessels and decrease coronary flow velocity, potentially increasing the risk of heart attack.

Aftermath

- Information from the “CDC Health Effects of Cigarette Smoking Fact Sheet” (Updated January 2008):
 - Cigarette smokers are two to four times more likely to develop coronary heart disease than nonsmokers.
 - Cigarette smoking approximately doubles a person’s risk for stroke.
 - Cigarette smokers are more than 10 times as likely as nonsmokers to develop peripheral vascular disease.

Cost

- Direct medical costs (\$96 billion) and lost productivity costs associated with smoking (\$97 billion) total an estimated \$193 billion per year. (*CDC. Smoking and tobacco use: fast facts.*)

High Blood Cholesterol and Other Lipids

Prevalence

Youth

- Among children ages 4–11, the mean total blood cholesterol level is 165.8 mg/dL. For boys, it is 165.4 mg/dL and for girls, it is 166.3 mg/dL. (*NHANES 2005–06*)
- Among adolescents ages 12–19, the mean total blood cholesterol level is 160.4 mg/dL. For boys, it is 156.8 mg/dL and for girls, it is 164.2 mg/dL. (*NHANES 2005–06*)
- About 9.6 percent of adolescents ages 12–19 have total cholesterol levels exceeding 200 mg/dL. (*NHANES 2005–06*)

Adults

- The 2006 prevalence of total cholesterol (in adults age 20 and older) at or above 200 mg/dL was 98,600,000 (45,000,000 males; 53,600,000 females). This represents about 45 percent of the adult population. (*NHANES 2005–06*)
- The 2006 prevalence of total cholesterol (in adults age 20 and older) at or above 240 mg/dL was 34,400,000 (14,600,000 males; 19,800,000 females). This represents about 16 percent of the adult population. (*NHANES 2005–06*)
- According to data from NHANES 2005–06, between 1999–2000 and 2005–06, mean serum total cholesterol levels in adults age 20 and older declined from 204 mg/dL to 199 mg/dL. (*NCHS Data Brief No. 2. December 2007.*)
- A 10 percent decrease in total cholesterol levels (population-wide) may result in an estimated 30 percent reduction in the incidence of CHD. (*MMWR Morb Mortal Wkly Rep.* 2000;49[33]:750–5.)
- 2007 data from the BRFSS survey showed that overall, 37.6 percent (median) of adults had been told that they had high blood cholesterol. The highest percentage was in West Virginia (42.4 percent) and the lowest was in Minnesota (32.4 percent). (www.cdc.gov/brfss/)

Adherence

Based on data from the Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults: (*Circulation.* 2002;106:3143–3421.)

- Less than half of persons who qualify for any kind of lipid-modifying treatment for coronary heart disease (CHD) risk reduction are receiving it.
- Less than half of even the highest-risk persons, those with symptomatic CHD, are receiving lipid-lowering treatment.
- Only about a third of treated patients are achieving their LDL goal; less than 20 percent of CHD patients are at their LDL goal.

LDL (Bad) Cholesterol Levels

LDL cholesterol at or above 130 mg/dL is a risk factor for heart disease and stroke.

Youth

- Among adolescents ages 12–19, the mean LDL cholesterol level is 87.9 mg/dL. For boys, it is 85.4 mg/dL and for girls, it is 90.5 mg/dL. (*NHANES 2005–06*)

Adults

- The 2006 prevalence (in adults age 20 and older) of LDL cholesterol 130 mg/dL or higher was 71,800,000 (35,800,000 males; 36,000,000 females). This represents about 33 percent of the adult population. (*NHANES 2005–06*)
- The mean level of LDL cholesterol for American adults age 20 and older is 115 mg/dL. Levels of 130–159 mg/dL are considered borderline high. Levels of 160–189 mg/dL are classified as high, and levels of 190 mg/dL and higher are very high. (*NHANES 2005–06*)

HDL (Good) Cholesterol Levels

The higher a person’s HDL cholesterol level is, the better.

Youth

- Among children and adolescents ages 4–11, the mean HDL cholesterol level is 56.3 mg/dL. For boys, it is 57.4 mg/dL and for girls, it is 55.3 mg/dL. (*NHANES 2005–06*)
- Among adolescents ages 12–19, the mean HDL cholesterol level is 52.2 mg/dL. For boys, it is 49.8 mg/dL and for girls, it is 54.7 mg/dL. (*NHANES 2005–06*)

Adults

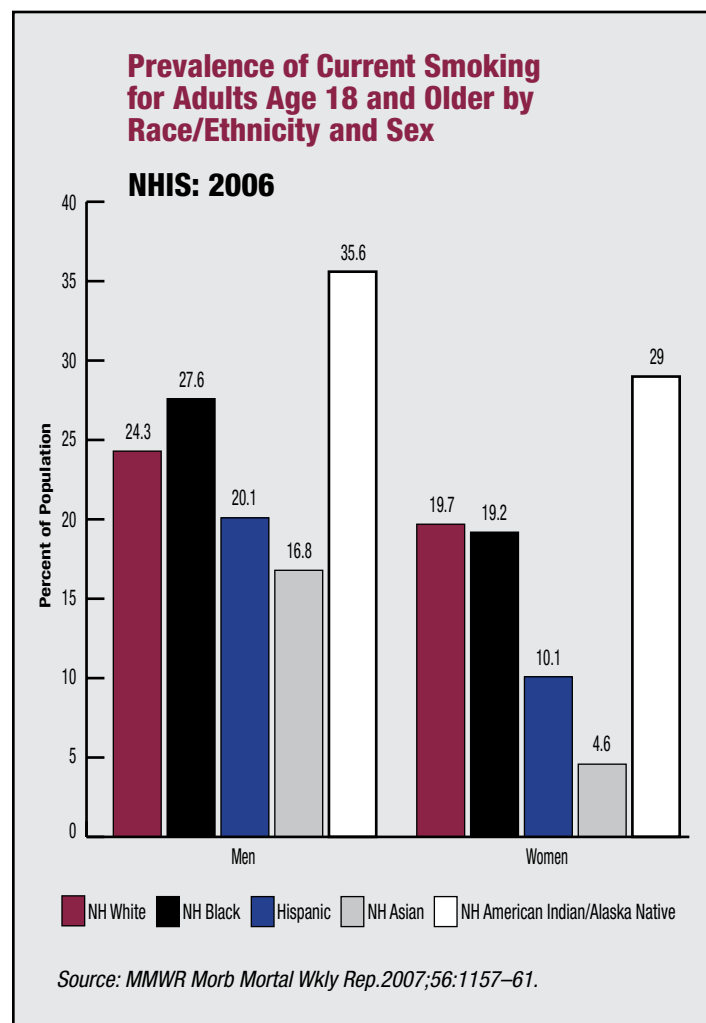
- The 2006 prevalence (in adults age 20 and older) of HDL cholesterol less than 40 mg/dL was 33,900,000 (26,300,000 males; 7,500,000 females). This represents about 16 percent of the adult population. (*NHANES 2005–06*)
- The mean level of HDL cholesterol for American adults age 20 and older is 54.6 mg/dL. (*NHANES 2005–06*)

Triglyceride Levels

The lower a person’s triglyceride level is the better. A level of more than 150 mg/dL in adults is considered high, a risk factor for heart disease and stroke.

Youth

- Among adolescents ages 12–19, the mean triglyceride level is 90.6 mg/dL. For boys it is 88.0 mg/dL and for girls it is 93.2 mg/dL. (*NHANES 2005–06*)



Adults

- The mean triglyceride level for American adults age 18 and older is 146.0 mg/dL (men, 157.7 mg/dL; women, 135.0 mg/dL). (*NHANES 2005–06*)

Overweight and Obesity

Prevalence

Youth

- Nearly 10 million children and adolescents ages 6–19 are considered overweight, based on the 95th percentile or higher of BMI-for-age values in the 2000 CDC growth chart for the United States. (*NHANES [2003–06], NCHS*).
- Based on data from NHANES, the prevalence of overweight (BMI at or above the 95th percentile of the CDC growth charts) in children ages 6–11 increased from 4.0 percent in 1971–74 to 17.0 percent in 2003–06. The prevalence of overweight in adolescents ages 12–19 increased from 6.1 percent to 17.6 percent. (*Health, United States, 2007, NCHS; JAMA. 2008;299:2401–5.*)
- In 2003–06, just over 12 percent of preschool children ages 2–5 were overweight. (*JAMA. 2008;299:2401–5.*)
 - Among preschool children, the following were overweight: 10.7 percent of non-Hispanic whites, 14.9 percent of non-Hispanic blacks and 16.7 percent of Mexican Americans.
 - Among children ages 6–11, the following are overweight: 15.0 percent of non-Hispanic whites, 21.3 percent of non-Hispanic blacks and 23.8 percent of Mexican Americans.
 - Among adolescents ages 12–19, the following are overweight: 16.0 percent of non-Hispanic whites, 22.9 percent of non-Hispanic blacks and 21.1 percent of Mexican Americans.
- Among infants and children 6–23 months of age, the prevalence of overweight (high weight for age) increased from 7.2 percent in 1976–80 to 11.5 percent in 2003–06. (*NHANES, NCHS*)
- Overweight adolescents have a 70 percent chance of becoming overweight adults. This increases to 80 percent if one or both parents are overweight or obese. (www.surgeongeneral.gov/topics/obesity/calltoaction/fact_adolescents.htm)

- Data from the CDC's YRBS 2007 survey showed that the prevalence of being overweight was higher among non-Hispanic black (19.0 percent) and Hispanic (18.1 percent) than non-Hispanic white (14.3 percent) students; higher among non-Hispanic black female (21.4 percent) and Hispanic female (17.9 percent) than non-Hispanic white female (12.8 percent) students; and higher among non-Hispanic black male (16.6 percent) and Hispanic male (18.3 percent) than non-Hispanic white male (15.7 percent) students. (*CDC. YRBS Survey 2007.*)

Adults

- In 2006, an estimated 145,000,000 U.S. adults (age 20 and older) were overweight or obese (76,900,000 males; 68,100,000 females.) This represents 66.7 percent of the adult population.

- In 2006, an estimated 74,100,000 U.S. adults (age 20 and older) were obese (34,700,000 males; 39,400,000 females). This represents about 33.9 percent of the adult population.
- The age-adjusted prevalence of overweight and obesity (BMI 25 or higher) increased from 64.5 percent in NHANES 1999–2000 to 66.3 percent in NHANES 2003–04. The prevalence of obesity (BMI 30 or higher) increased during this period from 30.5 percent to 34.3 percent. Extreme obesity (BMI 40.0 or higher) increased from 4.7 percent to 5.9 percent. (*JAMA. 2008;299:2401–5.*)
- According to 2007 data from the BRFSS/CDC survey based on self-reported height and weight, 26.3 percent (median) of adults were obese. The highest prevalence of obesity was in Mississippi (32.6 percent) and the lowest was in Colorado (19.3 percent). (*MMWR Morb Mortal Wkly Rep. 2008;57:765–8.*)
- Data from the 2007 NHIS study of the NCHS showed that black adults age 18 and older were less likely (28.1 percent) than American Indians or Alaska Natives (32.7 percent), whites (37.4 percent) and Asians (57.4 percent) to be at a healthy weight. (*National Health Interview Survey, 2007.*)
- The WHO estimates that by 2015, the number of overweight people worldwide will increase to 2.3 billion, and more than 700 million will be obese. In 2005, at least 20 million children worldwide under age 5 were overweight. (*WHO. Obesity and Overweight. Fact Sheet No. 311. www.who.int/mediacentre/factsheets/fs311/en/print.html*)

Cost

- According to one study, annual medical spending on overweight and obesity could be as high as \$92.6 billion in 2002 dollars, which would represent 9.1 percent of U.S. health expenditures. According to another estimate, the annual cost of overweight and obesity, in 2001 dollars, is \$117 billion. (*Health Aff [Millwood]. 2003;Suppl Web Exclusives:W3-219-W3-226; Weight Control Information Network, http://www.win.niddk.nih.gov/statistics/index*)

Diabetes Mellitus

(ICD/9 250) (ICD/10 E10–E14).

Prevalence

Youth

- About 186,000 people under age 20 have diabetes. Each year, about 15,000 people under 20 are diagnosed with type 1 diabetes. Healthcare providers are finding more and more children with type 2 diabetes, a disease usually diagnosed in adults age 40 and older. Children who develop type 2 diabetes are typically overweight or obese and have a family history of diabetes. Most are American Indian, black, Asian, or Hispanic/Latino. (*CDC. National Diabetes Fact Sheet, 2007; http://www.searchfordiabetes.org/public/documents/CDCFact2008.pdf*)
- Among adolescents ages 10–19 diagnosed with diabetes, 57.8 percent of blacks were diagnosed with type 2 versus type 1 diabetes, compared with 46.1 percent of Hispanic and 14.9 percent of Caucasian youth. (*JAMA. 2007;297:2716–2.*)

Adults

- The 2006 prevalence (among adults age 20 and older) of physician-diagnosed diabetes was 17,000,000 (7,500,000 males; 9,500,000 females). This represents about 7.7 percent of the adult population.
- The 2006 prevalence (among adults age 20 and older) of undiagnosed diabetes was 6,400,000 (3,900,000 males; 2,500,000 females). This represents about 2.9 percent of the adult population.
- The 2006 prevalence (among adults age 20 and older) of prediabetes was 57,000,000 (34,000,000 males; 23,000,000 females). This represents about 25.9 percent of the adult population.
- Based on projections from NHANES/NCHS studies between 1984 and 2004, the total prevalence of diabetes in the United States is expected to more than double from 2005 to 2050 (from 5.6 percent to 12.0 percent) in all age, sex and race/ethnicity groups. (*Diabetes Care. 2006;29:2114–6.*)
- The prevalence of diabetes for all age groups, worldwide, was estimated to be 2.8 percent in 2000 and a projected 4.4 percent in 2030. The total number of people worldwide with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. (*Diabetes Care. 2006;29:2114–2116.*)
- Type 2 diabetes accounts for 90–95 percent of all diagnosed cases of diabetes. (diabetes.niddk.nih.gov/dm/pubs/statistics/index.htm)

Incidence

- Data from the FHS indicate a doubling in the incidence of diabetes over the past 30 years, and most dramatically during the 1990s. FHS participants who attended a routine examination in the 1970s, 1980s, or 1990s were followed up for the eight-year incidence of diabetes across decades for participants 40–55 years of age in each decade. The age-adjusted eight-year incidence rate of diabetes was 2.0 percent, 3.0 percent and 3.7 percent among women and 2.7 percent, 3.6 percent and 5.8 percent among men in the 1970s, 1980s, and 1990s, respectively. (*Circulation. 2006;113:2914–2918.*)

Mortality

Diabetes mortality in 2005 was 75,119. Total-mention mortality (see glossary for definition of “total mention mortality”) in 2005 was 233,600. (*NCHS and NHLBI*)

- The 2005 overall death rate from diabetes was 24.6. Death rates (per 100,000 persons) were 26.5 for white males, 50.8 for black males, 19.3 for white females and 43.8 for black females. (*Natl Vital Stat Rep. 2008;56:1–120.*)
- At least 65 percent of people with diabetes mellitus die of some form of heart disease or stroke. (*NIDDK/NIH*)

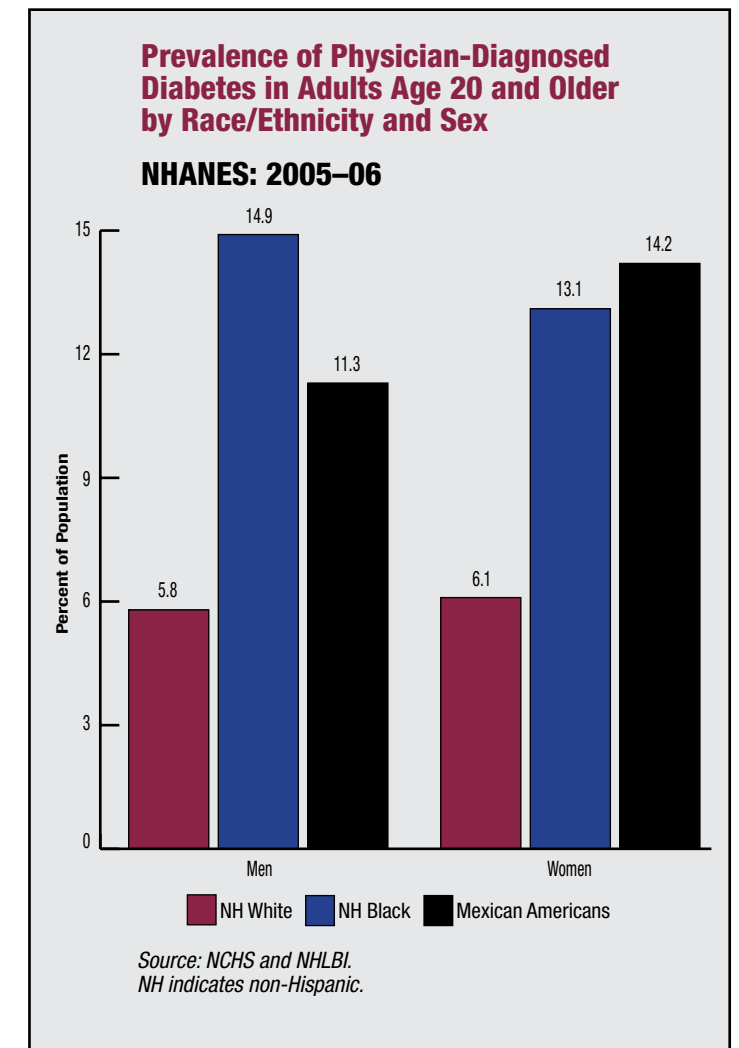
- Heart disease death rates among adults with diabetes are two to four times higher than the rates for adults without diabetes. (diabetes.niddk.nih.gov)

Awareness

- The NIDDK estimates that 20.8 million Americans have diabetes and that about 30 percent are unaware they have it. (*NIDDK. National Diabetes Statistics Fact Sheet: General Information and National Estimates on Diabetes in the United States, 2005.*)

Cost

- In 2007, the direct (\$116 billion) and indirect (\$58 billion) cost attributable to diabetes was \$174 billion. (*NIDDK. National Diabetes Statistics, 2007 Fact Sheet.*)



- The term “metabolic syndrome” refers to a cluster of risk factors associated with cardiovascular disease (CVD) and type 2 diabetes. Several different definitions for metabolic syndrome (MetS) are in use; in the United States, the National Cholesterol Education Program’s (NCEP) ATP III definition and its two subsequent revisions have been the most commonly used. By this definition, MetS is diagnosed when three or more of the following five risk factors are present: (*Circulation* 2005. 112;2375-2752.)
 - Fasting plasma glucose of 100 mg/dL or higher
 - HDL cholesterol below 40 mg/dL in men or below 50 mg/dL in women
 - Triglycerides of 150 mg/dL or higher
 - Waist circumference of 102 cm or higher in men or 88 cm or higher in women
 - Systolic blood pressure of 130 mm Hg or higher, or diastolic pressure of 85 mm Hg or higher, or drug treatment for hypertension, or antihypertensive drug treatment in a patient with a history of hypertension
- Based on NHANES 1999–2002 data, the age-adjusted prevalence of MetS according to the 2004 AHA/NHLBI revision of the 2001 ATP III definition for adults was 34.6 percent.
- An estimated 76 million U.S. adults age 20 and older have MetS. (*Diabetes Care*.2005;28:2745–9.)
- Based on NHANES 1999–2002 data, the prevalence of MetS in adolescents ages 12–19 was 9.4 percent, representing about 2.9 million persons. The prevalence was 13.2 percent in males and 5.3 percent in females; 10.7 percent in whites, 5.2 percent in blacks and 11.1 percent in Mexican Americans. (*J Pediatr*. 2008;152:165–70.)
- Among overweight or obese adolescents (based on NHANES 1999–2002 data), 44 percent had MetS. (*J Pediatr*. 2008;152:165–70.)

Food and Nutrition

Adults

According to data from NHANES 2005–06:

- Average consumption of whole grains by white and black men and women was between 0.5 and 0.7 servings per day, with only 3 to 5 percent of white and black adults consuming three or more servings per day. Average whole grain consumption by Mexican Americans was about two servings per day, with 22 to 28 percent consuming three or more servings per day.
- Average fruit consumption ranged from 1.1 to 1.8 servings per day among white, black and Mexican-American adults. Eight to 11 percent of whites, 6 to 9 percent of blacks and 6 to 10 percent of Mexican-American adults consumed four or more servings per day. When 100 percent fruit juices were included, servings consumed approximately doubled.
- Average vegetable consumption ranged from 1.2 to 2.1 servings per day. Eleven to 14 percent of whites, 5 to 10 percent of blacks and 3 to 5 percent of Mexican American adults consumed five or more servings per day. Including vegetable juices and sauces had little effect on these consumption patterns.
- Average consumption of nuts, legumes and seeds was about two servings per week among black women, black men and white women, three servings per week among white men, and six and eight servings per week among Mexican-American women and men, respectively. About 18 percent of whites, 14 to 17 percent of blacks and 38 to 46 percent of Mexican Americans consumed four or more servings per week.
- Average consumption of processed meats was lowest among Mexican-American women (1.5 servings per week) and highest among black men (3.7 servings per week). Between 40 percent (Mexican-American women) and 68 percent (black men) of adults consumed one or more servings per week.
- Average consumption of sugar-sweetened beverages ranges from about six servings per week among white women to 18 servings per week among Mexican-American men. About 51 and 32 percent of white men and women, 76 and 66 percent of black men and women, and 78 and 61 percent of Mexican-American men and women, respectively, consumed 36 or more ounces (4.5 eight-ounce servings) per week.
- Average consumption of sweets and bakery desserts ranged from about four servings per day (Mexican-American men) to eight servings per day (white men). About two-thirds of white and black men and women and half of Mexican-American men and women consumed 25 or more servings per week.

Children and Adolescents

Based on data from NHANES 2005–06:

- Average whole grain consumption was low, ranging from 0.4 to 0.5 servings a day.
- Fruit consumption was low: 1.3 to 1.5 servings a day among children ages 5 to 9, 1.3 servings a day among children ages 10 to 14, and 0.8 servings a day among adolescents ages 15 to 19. When 100 percent fruit juices were included, servings approximately doubled or tripled.
- Average vegetable consumption was low: 0.8 to 0.9 servings a day, with only 2 percent of children in any age or sex subgroup consuming five or more servings a day.
- Average consumption of nuts, legumes and seeds ranged from 1.0 to 1.2 servings a day among adolescents ages 15 to 19 to 1.4 to 1.7 servings a day at younger ages.
- Average consumption of processed meats ranged from 2.1 to 3.4 servings a week.
- Average consumption of sugar-sweetened beverages was about eight servings per week in children ages 5 to 9, 11 to 14 servings in children ages 10 to 14, and 15 to 23 servings in adolescents ages 15 to 19.
- Average consumption of sweets and bakery desserts was about 10 servings per week in children ages 5 to 9 and 10 to 14, and six to nine servings in adolescents ages 15 to 19.

American Heart Association GWTG–CAD Program. Get With The GuidelinesSM (GWTG)—coronary artery disease (CAD) is an American Heart Association program for the improvement of quality of care. Participating hospitals are involved in initiatives specifically designed to increase adherence to key quality indicators in patients admitted with a cardiovascular event. The table below summarizes performance on the selected quality-of-care indicators. These were collected from 61,543 patients who were admitted to 295 hospitals participating in the GWTG–CAD program from Jan. 1, 2007–Dec. 31, 2007.

Quality-of-Care Measure (%)	White	Black	Hispanic	Men	Women
Aspirin at admission	97.3	96.8	97.9	97.9	96.5
Aspirin at discharge*	96.2	94.9	94.7	96.5	94.5
β-blocker at discharge*	95.6	95.8	94.0	95.9	94.4
ACEI at discharge	67.0	71.5	63.7	68.6	63.0
ACEI at discharge for AMI patients*	71.5	73.6	74.4	73.7	67.9
ACEI in LVSD patients	83.7	85.7	82.9	84.3	80.6
Lipid therapy at discharge	86.9	83.5	74.6	88.2	81.5
Lipid therapy at discharge if LDL >100 mg/dL*	90.6	90.7	87.8	92.6	86.4
Blood pressure control (to <140/90) at discharge	53.0	47.1	47.6	53.2	50.2
Smoking cessation counseling*	97.6	97.7	97.2	97.7	97.0
Referral to cardiac rehabilitation	75.2	76.2	68.0	71.1	69.0
Composite quality-of-care measure**	90.8	91.3	90.4	91.7	88.8

* Indicates the 5 key quality measures targeted in GWTG–CAD.

** The composite quality-of-care measure indicates performance on the provision of several elements of care. It is computed by summing the numerators for each key quality measure across the population of interest to create a composite numerator (all the care that was given), summing the denominators for each measure to form a composite denominator (all the care that should have been given), and reporting the ratio (the percentage of all the needed care that was given).

AMI: acute myocardial infarction
 LVSD: left ventricular systolic dysfunction
 LDL: low-density lipoprotein
 ACEI: angiotensin-converting enzyme inhibitor

American Heart Association/American Stroke Association GWTG–Stroke Program. Get With The GuidelinesSM (GWTG)—Stroke is an American Heart Association/American Stroke Association program for the improvement of quality of care. Participating hospitals are involved in initiatives specifically designed to increase adherence to key quality indicators in patients admitted with an ischemic stroke or transient ischemic attack. The table below summarizes performance on the selected treatment and quality-of-care indicators for acute stroke and secondary prevention. There were 184,437 clinically identified patients who were admitted to 917 hospitals participating in the GWTG–Stroke program from Jan. 1, 2007–Dec. 31, 2007.

Quality-of-Care Measure (%)	Overall	White	Black	Hispanic	Male	Female
IV tPA in patients who arrived <2 hr after symptom onset*	70.0	70.8	65.6	67.9	71.8	68.0
IV tPA in patients who arrived <3 hr after symptom onset	57.4	58.4	52.2	56.0	59.6	55.4
Documentation of ineligibility (why no tPA)	94.5	94.7	93.2	94.2	94.4	94.5
Rate of symptomatic brain hemorrhage after tPA**	5.2	4.9	6.9	5.8	5.1	5.4
Antithrombotics <48 hr after admission*	96.8	96.9	96.6	96.5	96.9	96.4
DVT prophylaxis by second hospital day*	87.2	86.9	88.8	86.4	88.1	86.7
Antithrombotics at discharge*	98.9	98.8	98.9	98.8	98.8	98.7
Anticoagulation for AF at discharge*	98.0	98.0	97.2	99.4	98.3	97.8
Therapy at discharge if LDL >100 mg/dL or on therapy at admit*	84.8	84.6	85.0	85.7	87.0	83.0
Counseling for smoking cessation*	91.3	91.5	91.4	88.7	91.1	91.1
Lifestyle changes recommended for BMI >25 kg/m ²	46.1	45.1	49.5	49.5	46.4	44.9
Composite quality-of-care measure	92.7	92.7	92.8	92.4	93.3	92.1

In-hospital mortality for the overall patient population was 6.97% and mean length of hospital stay 5.25 days (median 4.00 days).

*Indicates the 7 key performance measures targeted in GWTG–Stroke
 IV tPA: intravenous tissue plasminogen activator
 DVT: deep vein thrombosis
 AF: atrial fibrillation
 LDL: low-density lipoprotein
 BMI: body mass index

American Heart Association GWTG–HF Program. Get With The GuidelinesSM (GWTG)—Heart Failure (HF) is an American Heart Association program for the improvement of quality of care. Participating hospitals are involved in initiatives specifically designed to increase adherence to key quality indicators in patients admitted with heart failure. The table below summarizes performance on the selected quality-of-care indicators. These were collected from 45,307 patients who were admitted to 257 hospitals participating in the GWTG–HF program from Jan. 1, 2007–Dec. 31, 2007.

Quality-of-Care Measure (%)	White	Black	Hispanic	Men	Women
Complete set of discharge instructions*	85.4	84.9	83.6	85.3	83.7
Measure of LV function*	96.0	97.4	96.2	97.0	95.4
ACEI or ARB at discharge for patients with LVSD, no contraindications*	88.7	91.2	85.9	89.3	89.1
Smoking cessation counseling, current smokers*	94.6	94.9	95.7	94.9	94.6
β-blockers at discharge for patients with LVSD, no contraindications*	91.2	87.6	82.3	89.8	88.7
Hydralazine/nitrates at discharge for patients with LVSD, no contraindications	NM	7.7	NM	8.8**	6.2**
Anticoagulation for AF or atrial flutter, no contraindications	69.1	64.1	58.2	69.3	65.0
Composite quality-of-care measure	91.2	91.1	88.7	91.2	90.0

* Indicates the 5 key quality measures targeted in GWTG–HF.
 ** For black patients only.

LV: left ventricular
 ACEI: angiotensin-converting enzyme inhibitor
 ARB: angiotensin receptor blocker
 NM: not measured

13 Medical Procedures

Total Procedures

- From 1996–2006, the total number of inpatient cardiovascular operations and procedures increased 30 percent from 5,444,000 to 7,191,000 annually. (AHA computation.)

Cardiac Catheterization and Percutaneous Coronary Intervention

- From 1996–2006, the number of cardiac catheterizations increased from 1,161,000 to 1,115,000 annually. (NHDS, NCHS)
- In 2006, an estimated 1,313,000 percutaneous coronary intervention procedures were performed in the United States. (NHDS, NCHS)
- As of 2006, it was estimated that more than 70 percent of percutaneous coronary interventions were performed with drug-eluting as opposed to bare-metal stents. (U.S. Food and Drug Administration, Circulatory System Devices Panel. Meeting minutes, Dec. 8, 2006.)

Coronary Artery Bypass Surgery

- The National Center for Health Statistics estimates that in 2006, 448,000 coronary artery bypass procedures were performed on 253,000 patients in the United States.

Heart Transplantations

- In 2007, 2,210 heart transplantations were performed in the United States. There are 254 transplant hospitals in the United States, 130 of which perform heart transplantations. (<http://www.unos.org/>)
 - In the United States, 73.7 percent of heart transplantation patients are male, 67.6 percent are white, 25.4 percent are younger than age 35, 19.9 percent are ages 35–49, and 54.7 percent are age 50 or older.
 - As of May 30, 2008, the one-year survival rate for males was 87.5 percent and for females it was 85.5 percent; the three-year survival rate was 78.8 percent for males and 76.0 percent for females, and the five-year rate was 72.3 percent for males and 67.4 percent for females.
 - As of June 13, 2008, there were 2,607 heart patients on the transplant waiting list.

2006 National Healthcare Cost and Utilization Project Statistics: Mean Charges and In-Hospital Death Rates for Various Procedures

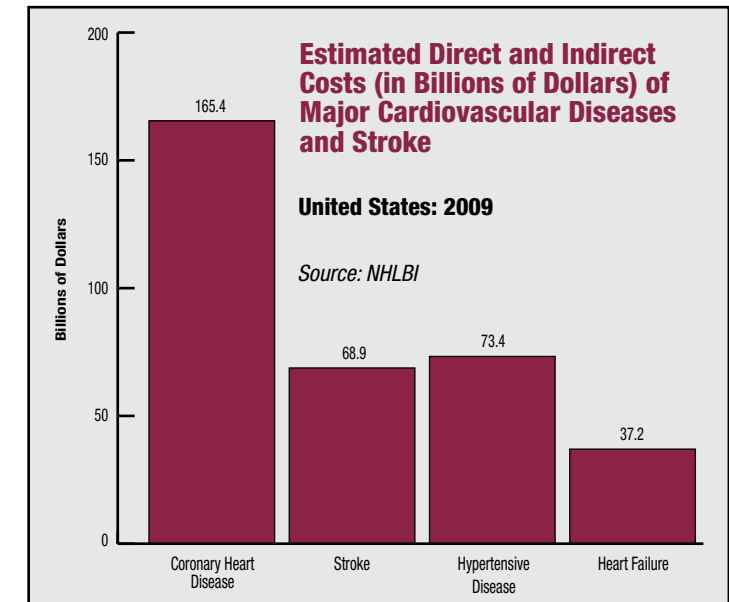
Procedure	Mean Charges	In-Hospital Death Rate
Coronary Artery Bypass Graft	\$99,743	1.94%
PCI	\$48,399	0.71%
Diagnostic Cardiac Catheterization	\$28,835	0.77%
Pacemaker	\$47,081	0.90%
Implantable Defibrillator	\$104,743	0.64%
Endarterectomy	\$25,658	0.38%
Valves	\$141,120	4.98%

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project.

Economic Cost of Cardiovascular Disease

14

- The total direct and indirect cost of cardiovascular diseases and stroke in the United States for 2009 is estimated at \$475.3 billion. This figure includes health expenditures (direct costs, which include the cost of physicians and other professionals, hospital and nursing home services, medications, home health care and other medical durables) and lost productivity resulting from morbidity and mortality (indirect costs). By comparison, in 2008 the estimated cost of all cancer and benign neoplasms was \$228 billion (\$93 billion in direct costs, \$19 billion in morbidity indirect costs and \$116 billion in mortality indirect costs). (National Heart, Lung, and Blood Institute. Fact Book, Fiscal Year 2007; <http://www.nhlbi.nih.gov/about/factbook/FactBookFinal.pdf>)
- Total hospital costs (inpatients, outpatients and emergency department patients) projected for 2009 for cardiovascular diseases and stroke are estimated at \$150.1 billion. (National Heart, Lung, and Blood Institute. Fact Book, Fiscal Year 2007; <http://www.nhlbi.nih.gov/about/factbook/FactBookFinal.pdf>)



Estimated Direct and Indirect Costs (in Billions of Dollars) of CVD and Stroke: United States: 2009

	Heart Diseases*	Coronary Heart Disease	Stroke	Hypertensive Disease	Heart Failure	Total Cardiovascular Disease
Direct costs						
Hospital	\$106.3	\$54.6	\$20.2	\$8.2	\$20.1	\$150.1
Nursing home	\$23.4	\$12.3	\$16.2	\$4.8	\$4.5	\$48.2
Physicians/other professionals	\$23.8	\$13.4	\$3.7	\$13.4	\$2.4	\$46.4
Drugs/other						
Medical durables	\$22.1	\$10.3	\$1.4	\$25.4	\$3.3	\$52.3
Home health care	\$7.4	\$2.2	\$4.4	\$2.4	\$3.4	\$16.8
Total expenditures	\$183.0	\$92.8	\$45.9	\$54.2	\$33.7	\$313.8
Indirect costs						
Lost productivity/morbidity	\$24.0	\$10.6	\$7.0	\$8.4	...	\$39.1
Lost productivity/mortality	\$97.6	\$62.0	\$16.0	\$10.8	\$3.5*	\$122.4
Grand totals	\$304.6	\$165.4	\$68.9	\$73.4	\$37.2	\$475.3

Ellipses (...) indicate data not available.

*This category includes CHD, HF, part of hypertensive disease, cardiac dysrhythmias, rheumatic heart disease, cardiomyopathy, pulmonary heart disease, and other or ill-defined "heart" diseases.

Totals do not add up because of rounding and overlap.

Lost future earnings of persons who will die in 2009, discounted at 3%.

All estimates prepared by Thomas Thom, NHLBI.

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- **Age-Adjusted Rates** — Used mainly to compare the rates of two or more communities, population groups or the nation as a whole, over time. The American Heart Association uses a standard population (2000), so that these rates aren't affected by changes or differences in the age composition of the population. Unless otherwise noted, death rates in this publication are age-adjusted per 100,000 population and are based on underlying mortality.
- **AHRQ – Agency for Healthcare Research and Quality** — A part of the U.S. Department of Health and Human Services, this is the lead agency charged with supporting research designed to improve the quality of health care, reduce its cost, improve patient safety, decrease medical errors, and broaden access to essential services.
- **Bacterial Endocarditis** — An infection of the heart's inner lining (endocardium) or the heart valves. The bacteria that most often cause endocarditis are streptococci, staphylococci, and enterococci.
- **Body Mass Index (BMI)** — A mathematical formula to assess body weight, relative to height. The measure correlates highly with body fat. Calculated as weight in kilograms, divided by the square of the height in meters (kg/m²).
- **Centers for Disease Control and Prevention/National Center for Health Statistics (CDC/NCHS)** — An agency within the US Department of Health and Human Services (USDHHS). The CDC conducts the:
 - Behavioral Risk Factor Surveillance System (BRFSS), an ongoing study.
 - The NCHS conducts or has conducted the:**
 - National Ambulatory Medical Care Survey (NAMCS).
 - National Health Examination Survey (NHES).
 - National Health and Nutrition Examination Survey I (NHANES I, 1971–74).
 - National Health and Nutrition Examination Survey II (NHANES II, 1976–80).
 - National Health and Nutrition Examination Survey III (NHANES III, 1988–94)
 - National Health and Nutrition Examination Survey (NHANES, 1999–....)
 - National Hospital Ambulatory Medical Care Survey (NAMCS)
 - National Health Examination survey (NHES)
 - National Health Interview Survey (NHIS)
 - National Home and Hospice Care Survey
 - National Hospital Discharge Survey (NHDS)
- **Centers for Medicare and Medicaid Services (CMS), formerly Health Care Financing Administration (HCFA)** — The federal agency that administers the Medicare, Medicaid and Child Health Insurance Programs.
- **Comparability Ratio** — Provided by the NCHS to allow time-trend analysis from one ICD revision to another. It compensates for the “shifting” of deaths from one causal code number to another. Its application to mortality based on one ICD revision means that mortality is “comparability-modified” to be more comparable to mortality coded to the other ICD revision.
- **Coronary Heart Disease (ICD/10 codes I20-I25)** — This category includes acute myocardial infarction (I21-I22); other acute ischemic (coronary) heart disease (I24); angina pectoris (I20); atherosclerotic cardiovascular disease (I25.0); and all other forms of chronic ischemic heart disease (I25.1-I25.9).
- **Death Rate** — The relative frequency with which death occurs within some specified interval of time in a population. National death rates are computed per 100,000 population. Dividing the mortality by the population gives a crude death rate. It's restricted because it doesn't reflect a population's composition with respect to such characteristics as age, sex, race or ethnicity. Thus, rates calculated within specific subgroups, such as age-specific or sex-specific rates, are often more meaningful and informative. They allow well-defined subgroups of the total population to be examined.
- **Diseases of the Circulatory System – ICD codes (I00-I99)** — included as part of what the American Heart Association calls “Cardiovascular Disease.” Mortality data for states can be obtained from cdc.gov/nchs, by direct communication with the CDC/NCHS, or from our National Center Biostatistics Program Coordinator on request. (See “Total Cardiovascular Disease” in this Glossary.)
- **Diseases of the Heart** — Classification the NCHS uses in compiling the leading causes of death. Includes acute rheumatic fever/chronic rheumatic heart diseases (I00-I09); hypertensive heart disease (I11) and hypertensive heart and renal disease (I13); coronary heart disease (I20-I25); pulmonary heart disease and diseases of pulmonary circulation (I26-I28); heart failure (I50); and other forms of heart disease (I29-I49, I50.1-I51). “Diseases of the Heart” is not equivalent to “Total Cardiovascular Disease,” which the American Heart Association prefers to use to describe the leading causes of death. “Diseases of the Heart” represents about three-fourths of “Total Cardiovascular Disease” mortality.
- **Health Care Financing Administration (HCFA)** — See Centers for Medicare and Medicaid Services (CMS).
- **Hispanic Origin** — In U.S. government statistics, “Hispanic” includes persons who trace their ancestry to Mexico, Puerto Rico, Cuba, Spain, the Spanish-speaking countries of Central or South America, the Dominican Republic or other Spanish cultures, regardless of race. It doesn't include people from Brazil, Guyana, Suriname, Trinidad, Belize and Portugal because Spanish is not the first language in those countries. Much of our data are for Mexican Americans or Mexicans, as reported by government agencies or specific studies. In many cases, data for all Hispanics are more difficult to obtain.
- **Hospital Discharges** — The number of inpatients discharged from short-stay hospitals where some type of disease was the first listed diagnosis. Discharges include those discharged alive, dead or status unknown.
- **ICD Codes** — A classification system in standard use in the United States. The “International Classification of Diseases” (ICD) is published by the World Health Organization. This system is reviewed and revised about every 10–20 years to ensure its continued flexibility and

feasibility. The tenth revision (ICD/10) began with the release of 1999 final mortality data. The ICD revisions can cause considerable change in the number of deaths reported for a given disease. The NCHS provides “comparability ratios” to compensate for the “shifting” of deaths from one ICD code to another. In this Update, the reported mortality is used for one year's data. To compare the number or rate of deaths with that of an earlier year, the “comparability-modified” number or rate is used.

- **Incidence** — An estimate, of the number of new cases of a disease that develop in a population in a one-year period. For some statistics, new and recurrent attacks, or cases, are combined. The incidence of a specific disease is estimated by multiplying the incidence rates reported in community- or hospital-based studies by the US population. The rates in this report change only when new data are available; they are not computed annually.
- **Major Cardiovascular Diseases** — Disease classification commonly reported by the NCHS; represents ICD codes I00-I78. The American Heart Association doesn't use “Major CVD” for any calculations. See “Total Cardiovascular Disease” in this Glossary.
- **Metabolic Syndrome*** — The metabolic syndrome is defined as having any 3 of the following 5 diagnostic measures: elevated waist circumference (>102 cm. in men or >88 cm. in women); elevated triglycerides (>150 mg/dL [1.7 mmol/L] or drug treatment for elevated triglycerides); reduced HDL (high-density lipoprotein) cholesterol (<40 mg/dL [0.9 mmol/L] in men or <50 mg/dL [1.1 mmol/L] in women or drug treatment for reduced HDL cholesterol); elevated blood pressure (>130 mm Hg systolic blood pressure or >85 mm Hg diastolic blood pressure or drug treatment for hypertension); elevated fasting glucose (>100 mg/dL or drug treatment for elevated glucose). *According to criteria established by the American Heart Association/National Heart, Lung, and Blood Institute, published in *Circulation*. (2005, Vol. 112, pages 2735-2752)
- **Morbidity** — Incidence and prevalence rates are both measures of morbidity, that is, measures of various effects of disease on a population.
- **Mortality** — The total number of deaths from a given disease in a population during a specific interval of time, usually a year. These data are compiled from death certificates and sent by state health agencies to the NCHS. The process of verifying and tabulating the data takes about two years. For example, final 2005 mortality statistics, the latest available, didn't become available until late 2007. Mortality is “hard” data, so it's possible to do time-trend analysis and compute percentage changes over time.
- **National Heart, Lung, and Blood Institute (NHLBI)** — An institute in the National Institutes of Health in the US Department of Health and Human Services. The NHLBI conducts such studies as the:
 - Framingham Heart Study (FHS) (1948 to date).
 - Honolulu Heart Program (HHP) (1965–97).
 - Cardiovascular Health Study (CHS) (1988 to date).
 - Atherosclerosis Risk in Communities (ARIC) study (1985 to date).
 - Strong Heart Study (SHS) (1989–92; 1991–98).**The NHLBI also published reports of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure and the Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III, or ATP III.)**

- **National Institute of Neurological Disorders and Stroke (NINDS)** — An institute in the National Institutes of Health in the US Department of Health and Human Services, the NINDS sponsors and conducts research studies such as these:
 - Greater Cincinnati/Northern Kentucky Stroke Study (GCNKSS)
 - Rochester (Minnesota) Stroke Epidemiology Project
 - Northern Manhattan Stroke Study (NOMASS)
 - Brain Attack Surveillance in Corpus Christi (BASIC) Project
 - **Prevalence** — An estimate of the total number of cases of a disease existing in a population during a specified period. Prevalence is sometimes expressed as a percentage of population. Rates for specific diseases are calculated from periodic health examination surveys that government agencies conduct. Annual changes in prevalence as reported in this booklet only reflect changes in the population; rates do not change until there's a new survey. Changes in rates can only be evaluated with data from new surveys. Estimates from NHANES 1999–2004 applied to 2005 population estimates.
- NOTE:** In the data tables, which are located in the different disease and risk factor categories, if the percentages shown are age-adjusted, they will not add to the total.
- **Race and Hispanic Origin** — Race and Hispanic origin are reported separately on death certificates. In this publication, unless otherwise specified, deaths of Hispanic origin are included in the totals for whites, blacks, American Indians or Alaska Natives and Asian or Pacific Islanders, according to the race listed on the decedent's death certificate. Data for Hispanic persons include all persons of Hispanic origin of any race. See “Hispanic Origin” in this Glossary.
 - **Stroke (ICD/10 codes I60-I69)** — This category includes: subarachnoid hemorrhage (I60); intracerebral hemorrhage (I61); other nontraumatic intracranial hemorrhage (I62); cerebral infarction (I63); stroke, not specified as hemorrhage or infarction (I64); occlusion and stenosis of precerebral arteries not resulting in cerebral infarction (I65); occlusion and stenosis of cerebral arteries not resulting in cerebral infarction (I66); other cerebrovascular diseases (I67); cerebrovascular disorders in diseases classified elsewhere (I68), and sequelae of cerebrovascular disease (I69).
 - **Total Cardiovascular Disease (ICD/10 codes I00-I99, Q20-Q28)** — This category includes: rheumatic fever/rheumatic heart disease (I00-I09); hypertensive diseases (I10-I15); ischemic (coronary) heart disease (I20-I25); pulmonary heart disease and diseases of pulmonary circulation (I26-I28); other forms of heart disease (I30-I52); cerebrovascular disease (stroke) (I60-I69); atherosclerosis (I70); other diseases of arteries, arterioles and capillaries (I71-I79); diseases of veins, lymphatics and lymph nodes not classified elsewhere (I80-I89); and other and unspecified disorders of the circulatory system (I95-I99). When data are available, we include congenital cardiovascular defects (Q20-Q28).
 - **Total Mention Mortality** — In a given year, the total number of death certificates in which a disease or condition is listed as the underlying cause of death or as a contributing (secondary) cause of death.
 - **Underlying or Contributing Cause of Death** — These terms are used by the NCHS when defining mortality. Underlying mortality is defined by WHO as “the disease or injury which initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury.” Contributing mortality is be any other disease or condition which the decedent may have also had.

ACE	angiotensin-converting enzyme	MACDP	Metropolitan Atlanta Congenital Defects Program
ACS	acute coronary syndrome	MetS	metabolic syndrome
ADHERE	Acute Decompensated HEart Failure National REgistry	mg/dL	milligrams per deciliter
AED	automated external defibrillator	MI	myocardial infarction
AF	atrial fibrillation	mm Hg	millimeters of mercury
AHA	American Heart Association	MMWR	Morbidity and Mortality Weekly Report
AHRQ	Agency for Healthcare Research and Quality	NAMCS	National Ambulatory Medical Care Survey
AIDS	acquired immune deficiency syndrome	NCEP	National Cholesterol Education Program
AJC	American Journal of Cardiology	NCHS	National Center for Health Statistics
AP	angina pectoris	NCQA	National Committee for Quality Assurance
ARIC	Atherosclerosis Risk in Communities	NEJM	New England Journal of Medicine
ATP	Adult Treatment Panel	NHAMCS	National Hospital Ambulatory Medical Care Survey
BMI	body mass index	NHANES	National Health and Nutrition Examination Survey
BP	blood pressure	NHDS	National Hospital Discharge Survey
BRFSS	Behavioral Risk Factor Surveillance System	NHES	National Health Examination Survey
BWIS	Baltimore-Washington Infant Study	NHIS	National Health Interview Survey
CAD	coronary artery disease	NHLBI	National Heart, Lung, and Blood Institute
CDC	Centers for Disease Control and Prevention	NIDDK	National Institute of Diabetes and Digestive and Kidney Diseases
CHD	coronary heart disease	NIHSS	National Institutes of Health Stroke Scale
CHS	Cardiovascular Health Study	NINDS	National Institute of Neurological Disorders and Stroke
CI	confidence interval	NNHS	National Nursing Home Survey
CMS	Centers for Medicare and Medicaid Services	NOMAS	Northern Manhattan Study
COPD	chronic obstructive pulmonary disease	NRMI	National Registry of Myocardial Infarction
CPI	Consumer Price Index	NVSS	National Vital Statistics System
CPR	cardiopulmonary resuscitation	OR	odds ratio
CVD	cardiovascular disease	PA	physical activity
DVT	deep vein thrombosis	PAD	peripheral arterial disease
ED	emergency department	PCI	percutaneous coronary intervention
EMS	emergency medical services	PE	pulmonary embolism
ER	emergency room	PTE	pulmonary thromboembolism
ESRD	end-stage renal disease	PVD	peripheral vascular disease
FHS	Framingham Heart Study	RF	rheumatic fever
GCKNKSS	Greater Cincinnati/Northern Kentucky Stroke Study	RHD	rheumatic heart disease
GWTG	Get With The Guidelines SM	RR	relative risk
HBP	high blood pressure	SAH	subarachnoid hemorrhage
HCFA	Health Care Financing Administration	SCD	sudden cardiac death
HCUP	Healthcare Cost and Utilization Project	SES	socioeconomic status
HDL	high-density lipoprotein	SHS	Strong Heart Study
HF	heart failure	STEMI	ST elevation myocardial infarction
HHP	Honolulu Heart Program	TIA	transient ischemic attack
HIV	human immunodeficiency virus	UA	unstable angina
ICD	International Classification of Diseases	UNOS	United Network for Organ Sharing
ICDA	International Classification of Diseases, Adapted	USDA	United States Department of Agriculture
ICH	intracerebral hemorrhage	USDHHS	United States Department of Health and Human Services
JACC	Journal of the American College of Cardiology	VF	ventricular fibrillation
JAMA	Journal of the American Medical Association	VSD	ventricular septal defect
JCAHO	Joint Commission on Accreditation of Health Care Organizations	VTE	venous thromboembolism
JNC	Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure	WHO	World Health Organization
kcal	kilocalories	YLL	years of life lost
LDL	low-density lipoprotein	YMCLS	Youth Media Campaign Longitudinal Study
LV	left ventricular	YRBS	Youth Risk Behavior Surveillance
LVEF	left ventricular ejection fraction		