

Coronary Heart Disease (CHD) Brief

What is Coronary Heart Disease?

Coronary Heart Disease (CHD), also called coronary artery disease¹, is the most common heart condition in the United States. It occurs as a result of atherosclerosis – when the coronary arteries that supply blood to the heart harden and narrow due to plaque buildup. Atherosclerosis can impede the blood flow to the heart so much that death of the heart muscle occurs from lack of oxygen. When this occurs, it is called a heart attack or myocardial infarction, and may result in heart arrhythmia (irregular heartbeats), heart failure, or sudden cardiac death.

CHD is the single leading cause of death in the United States, and accounted for 1 of every 6 deaths in 2009.¹ Approximately 1.2 million people in the United States suffer a new or recurrent heart attack each year, and nearly half (47%) die before they receive emergency services.²

In addition to heart attacks and sudden cardiac death, CHD can result in other poor health outcomes, such as high blood pressure, high (bad) cholesterol, stroke, and angina pectoris (chest pain or discomfort due to reduced blood supply to the heart). When individuals have other diseases, such as diabetes, they have an increased risk of dying from CHD.

Risk Factors for Coronary Heart Disease

Demographic Risk Factors

- *Race / Ethnicity*
- *Genetics or Family History*
 - The risk of CHD increases 2 to 3 times if a close relative has the disease.³
- *Age*
 - The risk of CHD, heart attack, and stroke increases with age.⁴
 - About 82% of people who die from CHD are 65 years or older.⁴
- *Gender*
 - Men are more likely to die from CHD than women.²
- *Socioeconomic Status*
 - Those of low socioeconomic status are at a higher risk for developing CHD than those of high socioeconomic status.⁴

Social and Behavioral Risk Factors

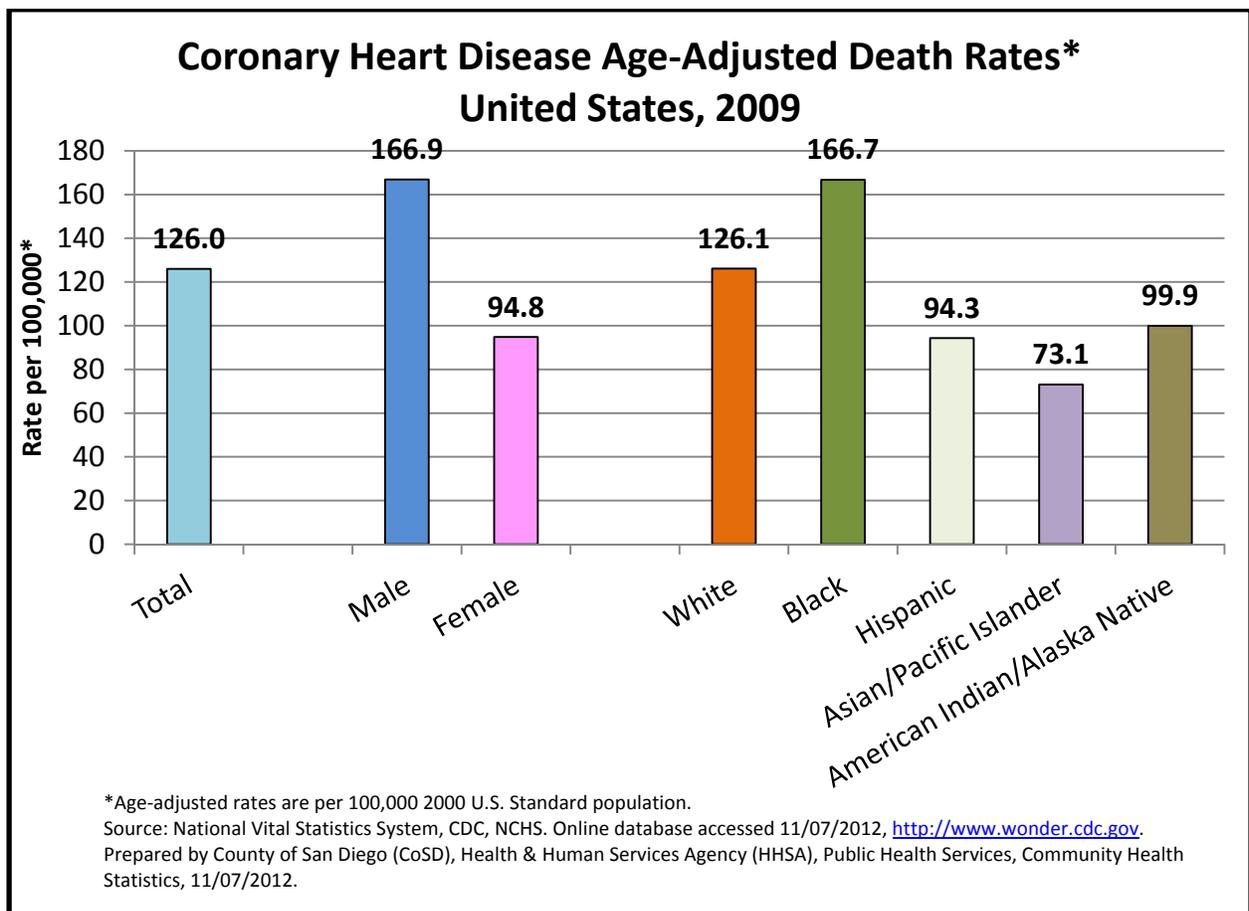
- *Tobacco Use*
 - In the United States, 25 million men and 21 million women have an increased risk of heart attacks and stroke because they smoke.⁴
 - Nationally, the risk of developing CHD is two to four times higher among smokers than non-smokers.⁴
 - Smoking-related CHD may contribute to congestive heart failure, and smokers who have a heart attack are more likely to die and die suddenly (within an hour) than nonsmokers.⁵
 - Smoking contributes to the development of atherosclerosis.⁵
- *Alcohol Abuse*
 - Drinking alcohol in excess can raise blood pressure, cause heart failure, and increase the risk for stroke.⁴
- *Lack of Physical Activity*
 - Physical inactivity contributes to CHD and to other CHD risk factors such as high blood pressure, high triglycerides, low levels of HDL (good) cholesterol, and diabetes.⁶
 - About 66 % of Americans over the age of 20 were overweight or obese in 2007.⁴
- *Poor Nutrition*
- *Poor Medical Care*
- *Stress, Depression*

Intermediate Outcomes

- *High Blood Pressure (BP \geq 140mm Hg/90 mm Hg)*
 - Having high blood pressure directly increases the risk of coronary heart disease, especially when it is present with other risk factors.⁷
 - High blood pressure affects approximately 1 in 3 adults in the United States, and more than half of Americans with high blood pressure do not have it under control.¹⁶
- *High Blood Cholesterol*
 - In 2007, approximately 37 million American adults had cholesterol levels above 240 mg/dL, the threshold at which it becomes a major risk factor for CHD.⁴
- *Angina Pectoris*
 - Approximately 8.9 million Americans have angina pectoris (chest pain or discomfort due to reduced blood supply to the heart).⁴
- *Diabetes Mellitus*
 - In the United States, approximately 3 of every 4 diabetics die from heart disease.⁶
- *Stroke*
 - A diseased heart increases the risk of stroke.⁵

National Statistics and Disparities

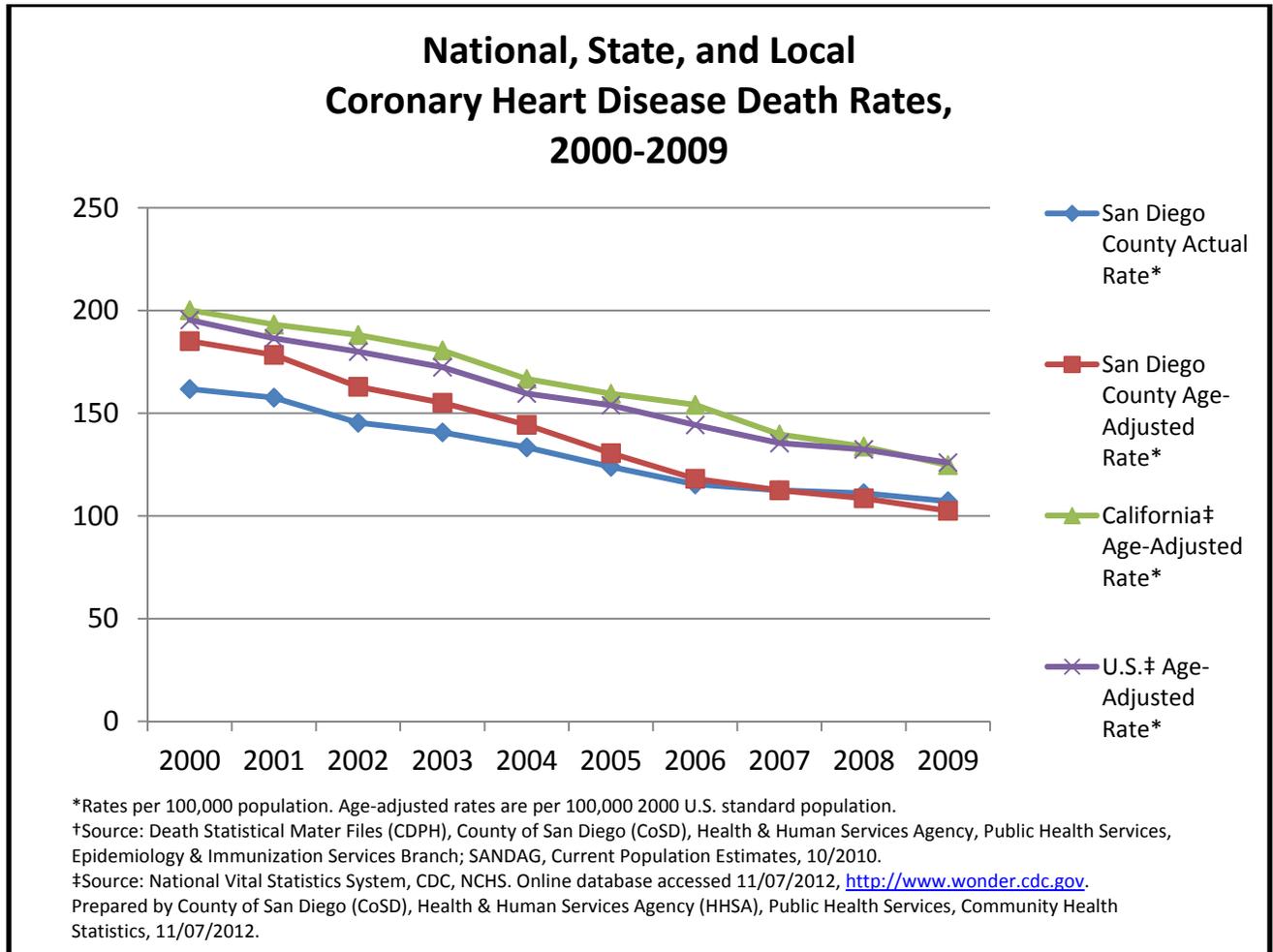
- Each year, more than 900,000 Americans have a heart attack. Of these, nearly one-third are among people who have previously had a heart attack.¹
- Nearly half Americans have one or more risk factors for CHD.¹
- CHD was the first listed diagnosis in four million hospital discharges in 2009.¹
- From 2007-2009, the South Region of the United States had the highest heart disease death rates, while the West Region had the lowest.



National Statistics and Disparities continued

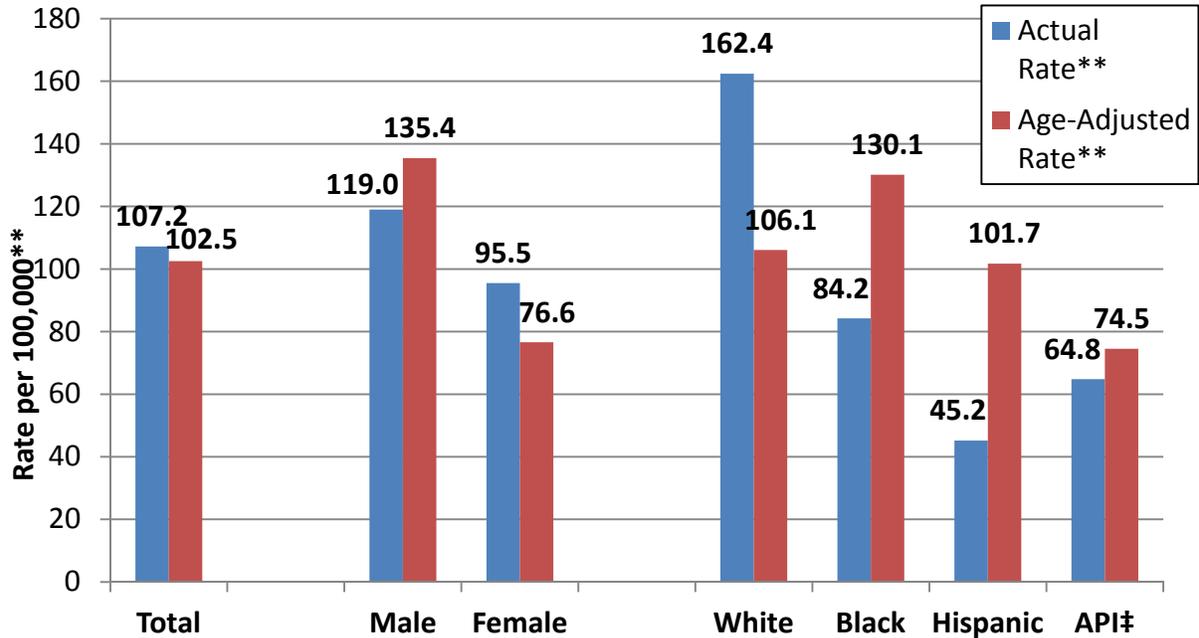
- *Race/Ethnicity*
 - In 2009, although more whites died (in number), blacks had the highest age-adjusted rate of death from CHD than all other races in the United States.¹⁰ Asian/Pacific Islanders had the lowest risk of dying from CHD than all other races, and American Indian/Alaska Native and Hispanics also had lower death rates than black or white Americans.¹⁰
 - Over a ten-year period, black women had a significantly higher risk of CHD than white women after controlling for age, education, and BMI.⁸ Black Americans are also more likely than white Americans to have high blood pressure, which is a major risk factor for CHD.¹
- *Gender*
 - In 2009, more than half of the deaths due to heart disease were in men.¹
 - Nearly half of men and a third of women over age 40 have CHD.⁵
 - The incidence of CHD in women lags behind men by ten years for total CHD, and by 20 years for heart attack and sudden death.⁵
- *Cost*
 - Together, heart disease and stroke are among the most widespread and costly health problems facing the Nation today, accounting for more than \$500 billion in health care expenditures and related expenses in 2010 alone.¹⁷
 - In 2009, the average length of stay for an individual entering the hospital for CHD complications was 4.6 days.¹

Local Statistics and Disparities



- Death rates from CHD have been declining since 2000 at the national, state, and local levels.
- In San Diego County, both the actual and age-adjusted coronary heart disease death rates were below the National and California rates from 2000 through 2008.⁹
- On average, 3,919 residents of San Diego County die from CHD every year.⁹

CHD Deaths*: Actual and Age-Adjusted Rates** San Diego County, 2009



* CHD Death refers to (underlying cause of death) ICD-10 codes I11,I20-I25.

** County actual rates are per 100,000 individuals. County age-adjusted rates per 100,000 2000 US standard population.

§ Rates not calculated for fewer than 5 events.

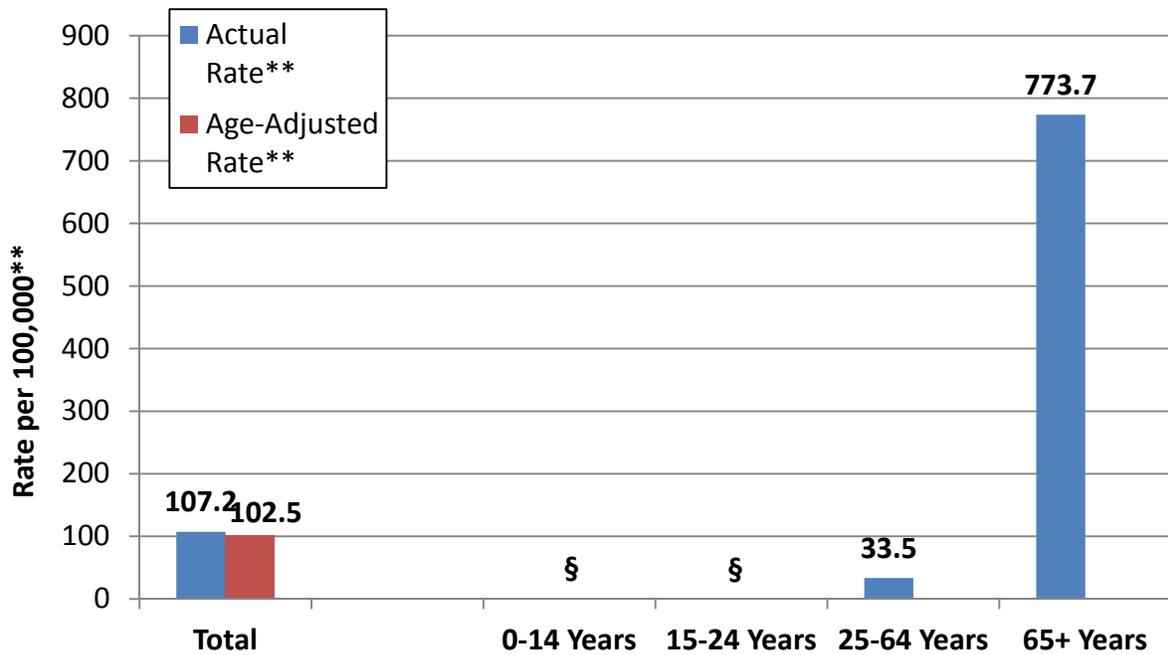
‡ API includes Asian and Pacific Islander.

Source: Death Statistical Master Files (CADPH), County of San Diego, Health & Human Services Agency, Epidemiology & Immunization Services Branch; SANDAG, Current Population Estimates, 10/2010.

Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHSA), Community Health Statistics, 9/19/2012.

- The 2009 age-adjusted death rate from CHD in San Diego County was 102.5 per 100,000 residents.
- By gender, males had a higher death rate than females (119.0 per 100,000 versus 95.5 per 100,000).
- Black residents had the highest age-adjusted CHD death rate, 130.1 per 100,000, followed by whites (123.0 per 100,000).⁹

CHD Death* Rates** by Age Group, San Diego County, 2009



* CHD Death refers to (underlying cause of death) ICD-10 codes I11,I20-I25.

** County actual rates are per 100,000 individuals. County age-adjusted rates per 100,000 2000 US standard population.

§ Rates not calculated for fewer than 5 events.

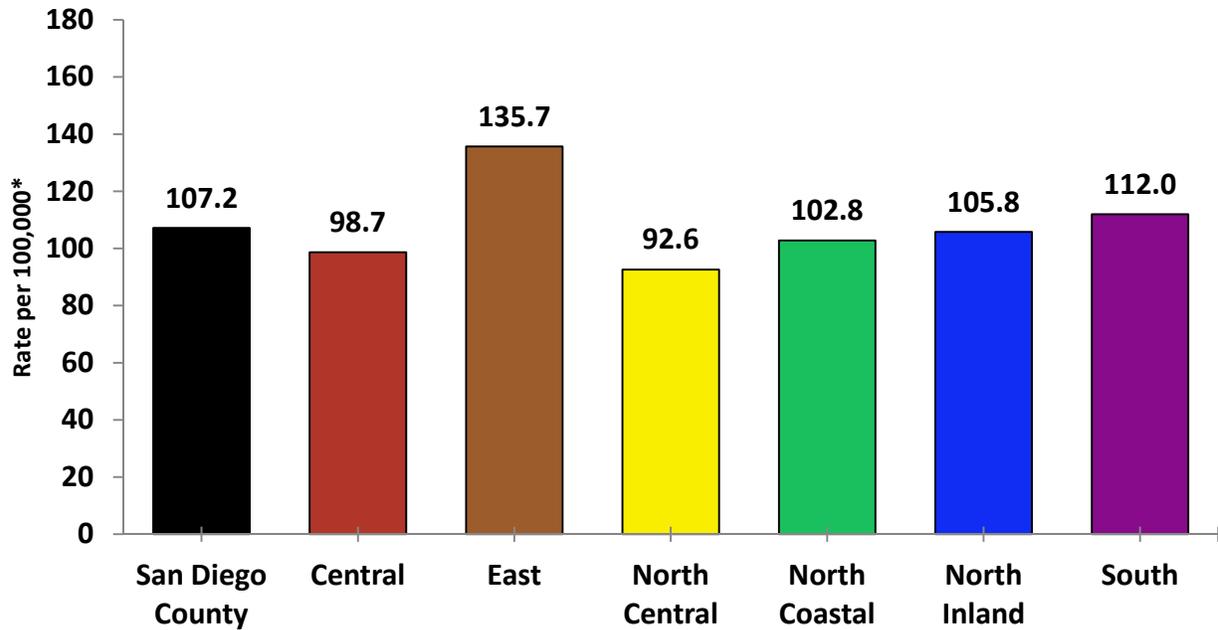
‡ API includes Asian and Pacific Islander.

Source: Death Statistical Master Files (CADPH), County of San Diego, Health & Human Services Agency, Epidemiology & Immunization Services Branch; SANDAG, Current Population Estimates, 10/2010.

Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHS), Community Health Statistics, 9/19/2012.

- In San Diego County in 2009, residents aged 65+ years had a death rate from CHD (773.7 per 100,000) that was approximately 7 times higher than the total San Diego County rate (107.2 per 100,000).⁹

Coronary Heart Disease[†] Rates* San Diego County, 2009



*Rates are per 100,000 population.

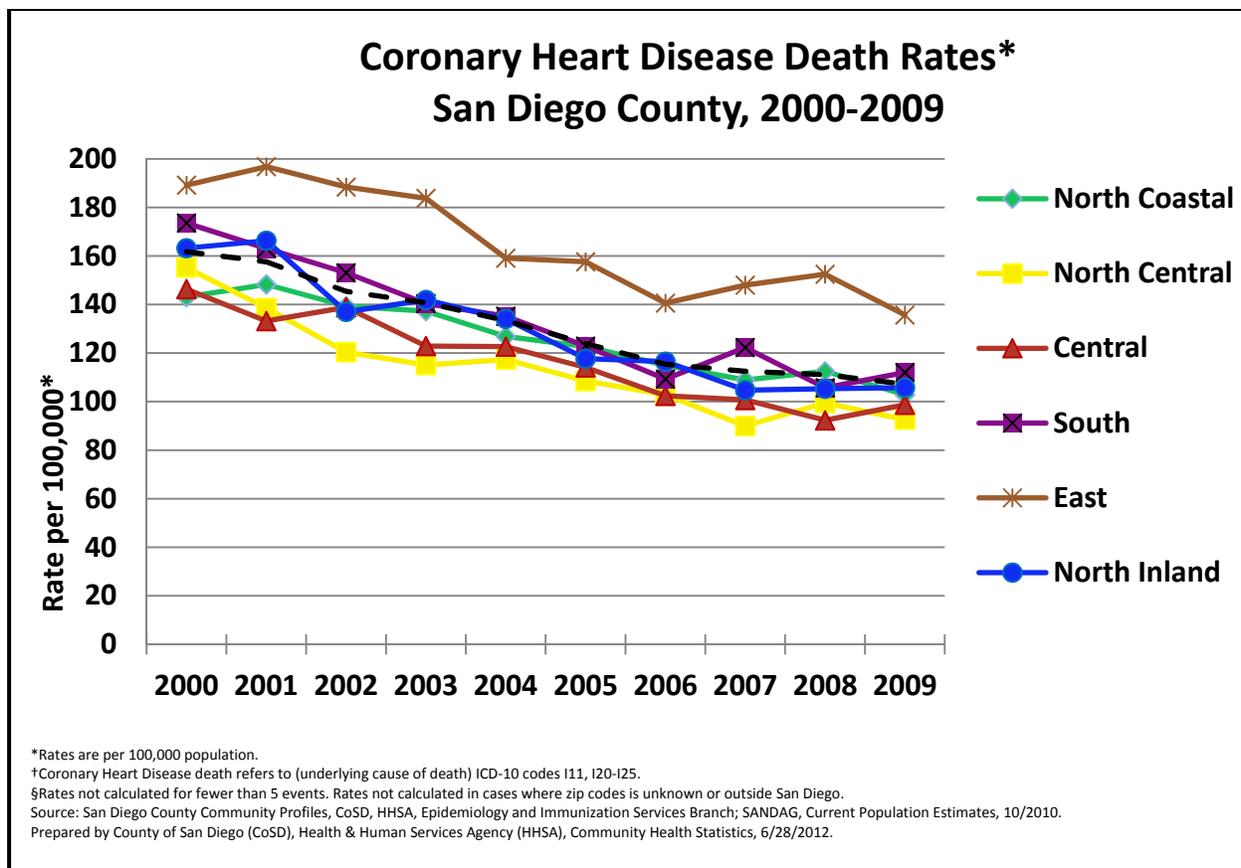
[†]Coronary Heart Disease death refers to (underlying cause of death) ICD-10 codes I11, I20-I25.

[§]Rates not calculated for fewer than 5 events. Rates not calculated in cases where zip codes is unknown or outside San Diego.

Source: San Diego County Community Profiles, CoSD, HHSA, Epidemiology and Immunization Services Branch; SANDAG, Current Population Estimates, 10/2010.

Prepared by County of San Diego (CoSD), Health & Human Services Agency (HHSA), Community Health Statistics, 6/28/2012.

- In 2009, the East Region of San Diego County had the highest coronary heart disease death rate, while the North Central Region had the lowest.



- From 2000-2009, the East Region of San Diego County has had the highest coronary heart disease death rates.

CHD and Its Complications: Prevention for Individuals

- *Don't smoke*
- *Be Physically Active*
 - Aerobic exercise is an important non-pharmacologic intervention for improving CHD risk factors.¹⁰
- *Eat Healthy Foods*
 - Foods high in saturated fat, trans fat, and cholesterol contribute to atherosclerosis.⁵
 - Consuming too much salt can cause high blood pressure in some people.⁵
- *Monitor Weight*
 - Obesity is a major risk factor for CHD.⁵
- *Avoid Excessive Alcohol Consumption*
 - Over-consumption of alcohol can lead to obesity.⁵
 - Drinking too much alcohol can raise blood pressure, cause heart failure, and lead to stroke.⁵

- *Have Regular Doctor Checkups*
 - Major risk factors such as smoking, elevated cholesterol or blood pressure, excess weight, and diabetes need to be identified and monitored by a physician.⁴
- *Control Cholesterol Levels*
 - Blood cholesterol level can be controlled through diet, exercise, weight loss, and/or drug therapy.⁴
- *Monitor Blood Pressure*
 - Blood pressure should be checked at least every two years if there is a history of HBP.⁵
 - Reducing systolic blood pressure by 12-13 mm Hg over four years can reduce the risk of CHD by 21 percent.¹²
- *Control Diabetes*
- *Know and Recognize the Major Symptoms of a Heart Attack*
 - The five major symptoms of a heart attack are⁴:
 - Pain or discomfort in the jaw, neck, or back.
 - Feeling weak, light-headed, or faint.
 - Chest pain or discomfort.
 - Pain or discomfort in arms or shoulder.
 - Shortness of breath.
- *If you think that you or someone you know is having a heart attack, call 9–1–1 immediately.*

Prevention Tools for Public Health Professionals: CHD Critical Pathway

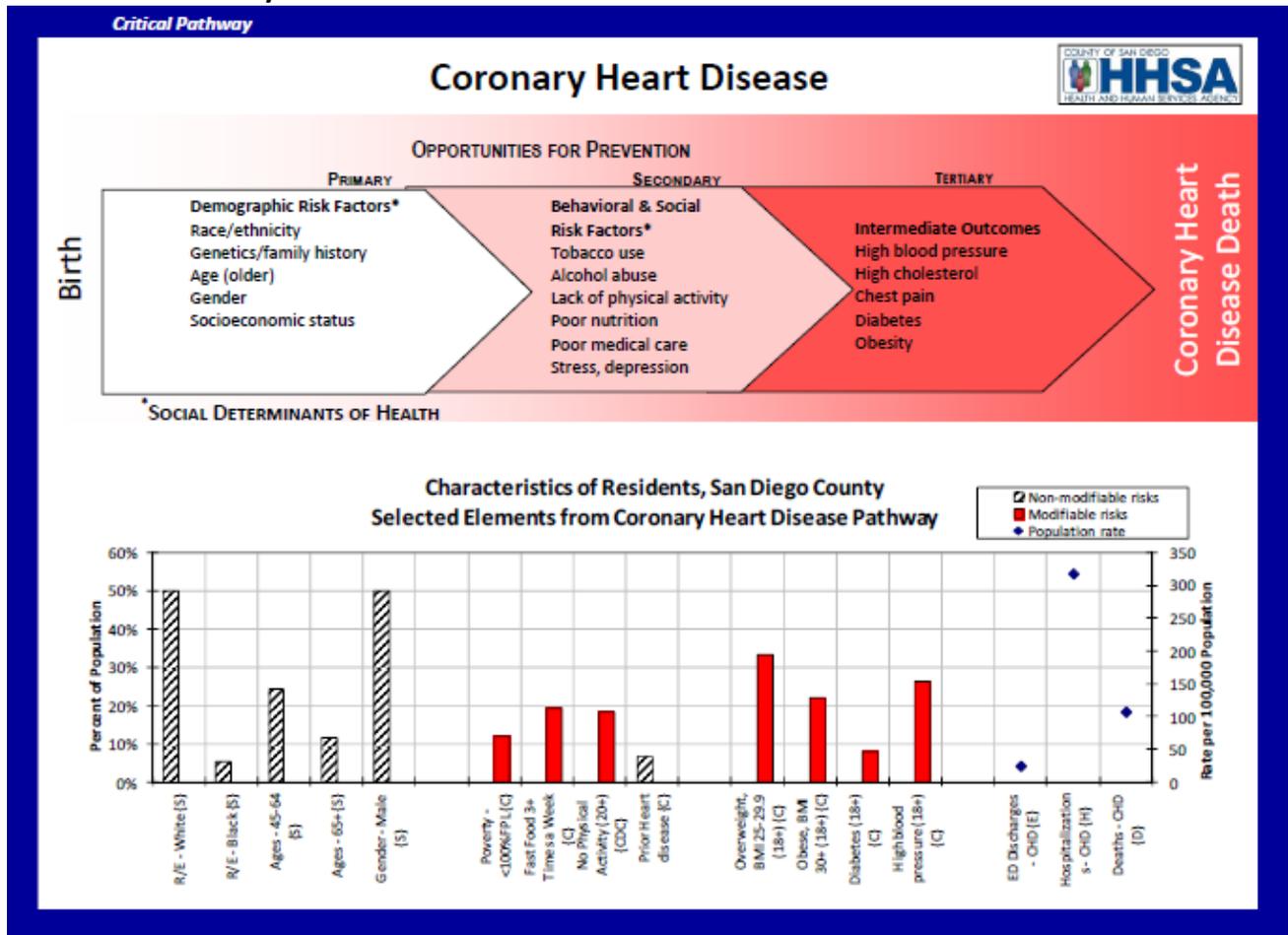
There are many opportunities for public health professionals in the community to help reduce the risk of CHD and to improve the health outcomes of individuals who already have the disease. To assist in community health efforts, a *CHD Critical Pathway* was developed.

The *CHD Critical Pathway* is a tool to be used in health promotion and disease prevention efforts. Its purpose is to identify populations at greater risk for CHD, and to identify prevention and early intervention opportunities. The *CHD Critical Pathway* displays a diagram of the major risk factors and intermediate outcomes or related diseases that have an impact on, or result from, CHD. Risk factors are marked as non-modifiable (black striped bars) such as race/ethnicity or gender and modifiable (solid colored bars) such as physical activity or high blood pressure.

Beneath the risk factors diagram is a data grid describing the San Diego resident population in relation to selected elements of the pathway. The data grid is designed to assist in quick identification of opportunities for interventions that might have a high impact on a particular disease. The data represent all San Diegans, not only those with a particular disease. The left axis (bar) indicates the percent of the population with a known risk factor or intermediate outcome. The right axis (diamond) indicates the rate of a particular medical encounter within the population that is specified. The data are described fully in the complete version of the *Critical Pathways*.¹⁰

In addition, the Community Health Statistics Unit website (www.SDHealthStatistics.com) provides detailed demographic, health and facility data including maps of geographically formatted health data. Also available are links to other County data sources, state and national sites of interest. For further assistance with data or interpretation, please contact the Community Health Statistics Unit.

CHD Critical Pathway to Disease



Data Sources

¹ Centers for Disease Control and Prevention, Division for Heart Disease and Stroke Prevention. Heart Disease Facts and Statistics. <http://www.cdc.gov/heartdisease/statistics.htm>. Last updated October 16, 2012. Accessed November 7, 2012.

² U.S. Department of Health & Human Services. National Institutes of Health. National Heart Lung and Blood Institute. Diseases and Conditions Index: Heart Attack. http://www.nhlbi.nih.gov/health/dci/Diseases/HeartAttack/HeartAttack_WhatIs.html. Last updated March 1, 2011. Accessed July 10, 2012.

³ Scheuner MT, Whitworth WC, McGruder H, Yoon PW, Khoury MJ. (2006). Familial risk assessment for early-onset coronary heart disease. *Genet Med* 8:525-531.

⁴ American Heart Association. My Heart and Stroke News. Coronary Artery Disease-The ABCs of CAD. February 2012. http://www.heart.org/HEARTORG/Conditions/More/MyHeartandStrokeNews/Coronary-Artery-Disease---The-ABCs-of-CAD_UCM_436416_Article.jsp. Accessed July 5, 2012.

⁵ Dept. of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health The health consequences of smoking: a report of the Surgeon General. U.S. G.P.O., 2004, Washington, D.C.

⁶ Centers for Disease Control and Prevention, Division for Heart Disease and Stroke Prevention (DHDSPP), "Heart Disease Risk Factors", http://www.cdc.gov/heartdisease/risk_factors.htm, October 26, 2009. Accessed July 10, 2012.

⁷ American Heart Association. High Blood Pressure or Hypertension. http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/High-Blood-Pressure_UCM_002020_SubHomePage.jsp. Accessed July 9, 2012.

⁸ Finkelstein, E., Khavjou, O., Mobley, L., Haney, D., & Will, J. (2004). Racial/ethnic disparities in coronary heart disease risk factors among WISEWOMAN enrollees. *Journal Of Women's Health* 13:503-518.

⁹ County of San Diego Health and Human Services Agency, Public Health Services. Community Health Statistics Unit. (2009). Healthy People 2010: Health Indicators for San Diego County. http://www.sdcounty.ca.gov/hhsa/programs/phs/documents/CHS-HealthyPeople2010SanDiego_2009.pdf. Accessed July 10, 2012.

¹⁰ County of San Diego Health and Human Services Agency, Public Health Services. Community Health Statistics Unit. (2009). Critical Pathways: the Disease Continuum, Coronary Heart Disease. January, 2012. http://www.sdcounty.ca.gov/hhsa/programs/phs/documents/CHS-Critical_Pathways_2012.pdf. Critical Pathways. Accessed July 5, 2012.

¹⁶ Ostchega Y, Yoon SS, Hughes J, et al. Hypertension awareness, treatment, and control—continued disparities in adults: United States, 2005–2006. [NCHS Data Brief] Centers for Disease Control and Prevention, National Center for Health Statistics, Division of Health and Nutrition Examination Surveys; 2008. Available from: <http://www.cdc.gov/nchs/data/databriefs/db03.pdf>. Accessed July 10, 2012.

¹⁷ Lloyd-Jones D, Adams RJ, Brown TM, et al. Heart disease and stroke statistics—2010 update: A report from the American Heart Association statistics committee and stroke statistics subcommittee. *Circulation*. 2010;121:e1-e170.