



Texas Department of State Health Services

## Heart Disease and Stroke in Texas 2003 Behavioral Risk Factor Surveillance System Report

*“Cardiovascular disease kills more Texans each year than any other disease. That’s why it’s so important ... to reverse the risk factors that can lead to illness and death. Prevention and early detection provide the best protection for a healthy heart.”*

Dr. Eduardo Sanchez, Commissioner,  
Texas Department of State Health Services

**One Texan dies of cardiovascular or cerebrovascular disease every 10 minutes.**<sup>1</sup> That adds up to about 56,000 deaths every year. CVD has been the leading cause of death in Texas since 1940, and nation-ally the death toll is almost 1 million annually. But fatalities are only a part of the picture. Over 64 million Americans live with CVD, the leading cause of premature, permanent disability.

Addressing CVD risk factors is the key to reducing this health burden.<sup>2-4</sup> Risks for CVD involve complex interactions among inherited traits, environmental factors, personal behaviors, and characteristics such as blood pressure, cholesterol, diet, weight, physical activity, and smoking. This report highlights the results of CVD survey data from the 2003 Behavioral Risk Factor Surveillance System (BRFSS) and provides recommendations for CVD prevention.

**Cardiovascular disease** refers to a group of diseases that target the heart and blood vessels. Common forms of cardiovascular disease include coronary artery disease, angina, and congestive heart failure. **Cerebrovascular disease** refers to pathology resulting from impaired blood supply to the brain (eg, stroke). Throughout this report, **CVD** refers to cardiovascular and cerebrovascular disease combined.

In this report, individuals **with CVD** are the respondents who were ever told by a physician or other health professional that they had a heart attack, angina, coronary heart disease, or stroke. The category, **without CVD**, identifies respondents who did not report a CVD event or diagnosis.

### Highlights of This Issue

- Medical advances continue to increase the number of CVD survivors, but their quality of life is often reduced as a result of the disease.
- Obesity has risen dramatically over the past 10 years, putting more Texans than ever at risk for CVD.
- Smoking rates remain too high, even among people with CVD.
- A large majority of people indicate that they would call 911 as a first response to a heart attack or stroke, but only a small percentage of respondents recognize all the major CVD symptoms.
- CVD events often motivate beneficial lifestyle changes, but prevention efforts need to focus on helping people make healthy choices before they have a heart attack or stroke.

### CVD Identification (2003 BRFSS Survey)

The answer "yes" to any of the questions below identified the respondent as "With CVD." (Other responses: No, Don't know/not sure, Refused)

Have you ever been told by a health professional that you had

- a heart attack, also called a myocardial infarction?
- angina or coronary heart disease?
- a stroke?

updated health risk data. The primary source of data on health risk factors among Texans is the Behavioral Risk Factor Surveillance System (BRFSS), an ongoing monthly telephone survey sponsored by the Texas Department of State Health Services (DSHS) and the Centers for Disease Control and Prevention (CDC).

### Prevention

Targeting behaviors that can be altered to reduce risk is fundamental to effective prevention. Prevention efforts in general can be categorized as primary, secondary, or tertiary.<sup>5</sup>

**Primary prevention** aims to prevent or forestall the occurrence of disease; it is directed to susceptible people before they develop disease. Ultimate success at a public health level is measured in terms of reduction in morbidity for the defined population. Primary prevention strategies for the general population involve such efforts as educational campaigns and public policy changes. Efforts that target individuals include one-on-one counseling.

The goal of **secondary prevention** is early diagnosis and prompt treatment of illness. It is directed to people who already have developed biologic changes resulting from disease. The goal is to reduce the consequences of disease. Screening is a key strategy for secondary prevention.

**Tertiary prevention** aims to prevent disability in people who are already symptomatic by curtailing progression of disease and its complications or by providing rehabilitation.

### Behavioral Risk Factor Surveillance System

Prevention efforts that are effective in reducing the personal, social, and economic costs of CVD depend on well-defined strategies based on regularly

Each month the BRFSS telephone survey collects health risk and behavioral data from randomly selected Texans 18 years of age or older. The data are weighted to reflect statewide age and sex distribution as well as the

**Table 1. CVD Prevalence by Selected Characteristics, 2003**

	%	(95% CI)
<b>Age (yrs)</b>		
18-44	2	( 1- 3 )
45-54	11	( 8-15 )
55-64	15	(12- 20)
≥65	27	(23- 32)
<b>Sex</b>		
Male	10	( 8-12 )
Female	8	( 6- 9 )
<b>Race/ethnicity</b>		
White	10	( 9-12 )
Black	7	( 4- 12 )
Hispanic	6	( 4- 10 )
<b>Education</b>		
Less than high school	12	( 9- 17 )
High school graduate and some college	9	( 8 -11 )
College graduate	6	( 4 - 8 )
<b>Annual household income</b>		
Less than \$25,000	14	(11 -17)
\$25,000-\$74,999	6	( 4 - 7 )
\$75,000+	6	( 4 - 9 )
<b>Resident of border county*</b>		
Border	11	( 6 -18 )
Nonborder	8	( 7 -10 )
<b>Resident of metro area</b>		
Metro	7	( 6 - 9 )
Nonmetro	14	(10-18)
<b>Total CVD</b>	<b>9</b>	<b>(8-10)</b>

Sample size=2,537

\* Includes 32 counties on the Texas-Mexico border

individual's probability of being selected and are extrapolated to represent the Texas population as a whole. The 2003 BRFSS collected CVD-related information from 2,537 Texas residents.

## 2003 Survey Results

The 2003 BRFSS survey data identify the factors that affect CVD rates in Texas and the characteristics of Texas residents with and without CVD. Survey results are presented for five areas: CVD prevalence, quality of life indicators, risk factors, preventive health practices, and knowledge of symptoms.

### Prevalence

About 9% of Texans 18 years of age or older have been told by a doctor or other health professional that they have CVD. See Table 1 for prevalence rates broken down by various demographic characteristics. Prevalence rates for 2003 are higher for the following groups of people:

- Over 45 years of age
- Lower educational level
- Lower income
- Resident of nonmetropolitan areas

At 27%, the highest percentage of CVD among all demographic categories is for people 65 years of age or older.

### Quality of Life Indicators

Quality of life is significantly lower for people with CVD (Table 2). Even when the data are adjusted for age, they show that people with CVD are much more likely to rate their general health as fair to poor, have physical or mental health problems, and be unable to do their usual activities. Adults with CVD who are younger than 65 years are also less likely to be employed.

### CVD Risk Factors

Risk factors for CVD include high blood pressure, high cholesterol, overweight or obesity, and diabetes.<sup>2,3,4</sup> (Figures 1 & 2). Although these risk factors are influenced by nonchangeable factors such as heredity,

**Table 2. Quality of Life Indicators, 2003\***

	%	(95% CI)
<b>General health fair to poor</b>		
With CVD	59	(44-72)
Without CVD	17	(16-19)
<b>Physical health not good (≥5 days in past month)</b>		
With CVD	48	(37-60)
Without CVD	17	(15-19)
<b>Mental health not good (≥5 days in past month)</b>		
With CVD	34	(22-49)
Without CVD	18	(16-20)
<b>Kept from doing usual activities (≥5 days in past mo)</b>		
With CVD	40	(27-56)
Without CVD	11	(9-12)
<b>Need special equipment (eg, cane, wheelchair, special bed)</b>		
With CVD	22	(14-34)
Without CVD	6	(5-7)
<b>Currently employed (ages 18 to 64 yrs)</b>		
With CVD	41	(26-59)
Without CVD	69	(67-71)

Sample size=2,537

\*Age adjusted to year 2000 standard population

behavioral factors, which can be changed, have been shown to be even more important.

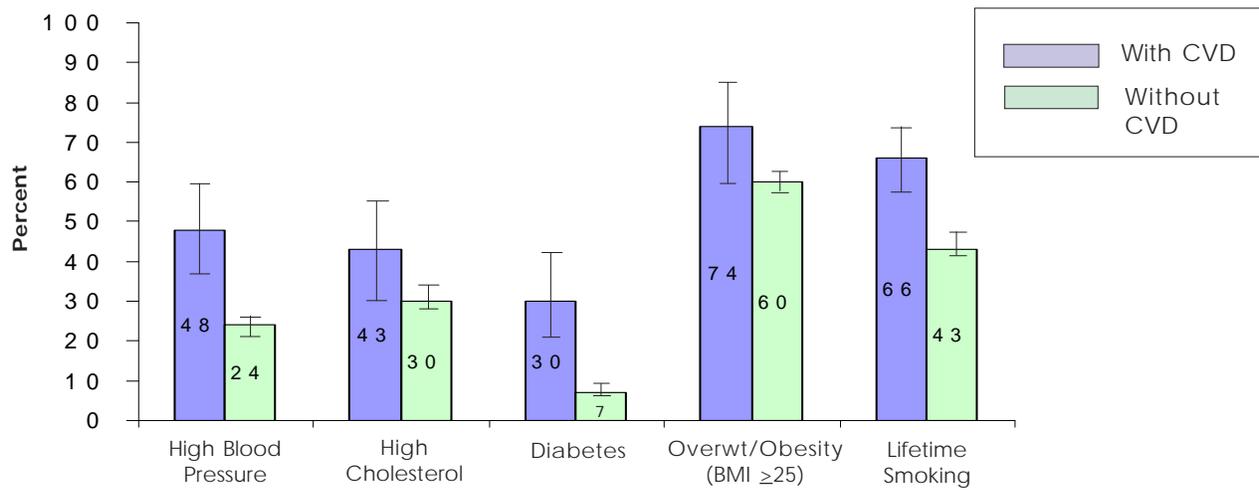
### Preventive Health Practices

CVD health risks that are completely under individual control include smoking, exercise, and diet.<sup>2,5</sup> Smoking, especially combined with other risk factors, greatly increases the chances of developing coronary heart disease.<sup>3,4,9</sup>

### CVD Burden in 2003

- Percentage of US deaths: nearly 40%<sup>4</sup>
- Years of potential productive life lost annually among Texans under age 65: over 120,000<sup>1,6</sup>
- Hospital charges in Texas: \$7 billion<sup>7</sup>
- Hospital charges in the US: \$100 billion<sup>8</sup>
- Total economic costs (direct and indirect) in the US: \$370 billion<sup>8</sup>

Figure 1. Risk Factor Prevalence: With vs. Without CVD, 2003\*



\* Age adjusted to year 2000 standard population

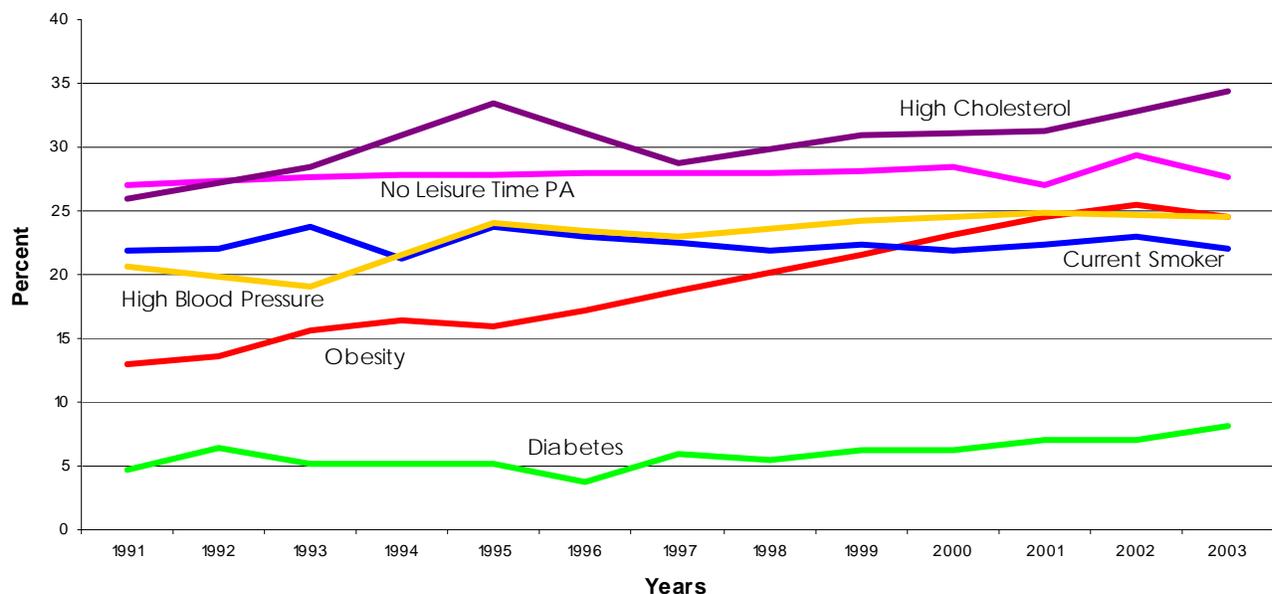
Smokers are also more likely to die from sudden cardiac arrest. Even nonsmokers exposed to secondhand smoke run a greater risk of heart disease. Smoking is one of the leading behaviors that increases the risk for developing CVD. Yet 2003 BRFSS survey data show a high rate of current smoking even among those who already have a diagnosis of CVD (Table 3).

In addition to tobacco use, the BRFSS survey includes questions on a range of other general prevention habits such as diet, exercise, and

use of preventive health screenings. Results for 2004 indicate that a CVD diagnosis may motivate at least some beneficial lifestyle changes. For example, compared with individuals “Without CVD,” those “With CVD” are more likely to report that they are

- taking aspirin daily or every other day (those 35 years of age and older)
- trying to eat less fat and high cholesterol food
- trying to eat more fruits and vegetables to lower their CVD risk)

Figure 2. Risk Factor Trends: 1991 - 2003



**Table 3. Risk Factors: Preventive Health Practices, 2003\***

	%	(95% CI)
<b>Lifetime cigarette smoking<sup>a</sup></b>		
With CVD	66	(59–72)
Without CVD	43	(41–45)
<b>Current smoking</b>		
With CVD	35	(25–47)
Without CVD	21	(19–23)
<b>Cholesterol screening within past 5 years</b>		
With CVD	78	(64–88)
Without CVD	69	(67–71)
<b>Eating fewer high fat or high cholesterol foods to lower risk</b>		
With CVD	83	(74–89)
Without CVD	66	(64–69)
<b>Eating at least 5 servings of fruits and vegetables per day</b>		
With CVD	21	(13–33)
Without CVD	23	(21–25)
<b>Eating more fruit and vegetables to lower risk</b>		
With CVD	85	(77–91)
Without CVD	72	(70–75)
<b>Overweight or obese and trying to lose weight</b>		
With CVD	39	(31–67)
Without CVD	54	(50–57)
<b>Taking aspirin daily or every other day (for those <math>\geq 35</math> years of age)</b>		
With CVD	57	(47–67)
Without CVD	29	(27–32)
<b>Meeting recommendations for physical activity<sup>b</sup></b>		
With CVD	58	(42–72)
Without CVD	54	(51–56)

Sample size=2,537

\*Age adjusted to year 2000 standard population

<sup>a</sup> At least 100 cigarettes (5 packs) in lifetime

<sup>b</sup> Moderate:  $\geq 30$  min/day for  $\geq 5$  days OR vigorous:  $\geq 20$  m/d,  $\geq 3$  d

Moreover, individuals with CVD may be slightly more likely to have received cholesterol screening within the past 5 years and to meet recommendations for physical activity, although differences on these two measures are within the survey's margin of error.

Doctors and other health professionals can have a strong influence on prompting individuals to

adopt behaviors that reduce CVD risk and complications.<sup>5</sup> BRFSS results indicate that individuals who have already had a CVD event are more likely than those who have not to report that they have received advice from a health professional regarding tobacco use, weight control, diet, and physical activity levels (Table 4). However, the low rates listed on Table 4 for both the "With CVD" and "Without CVD" groups may indicate that health professionals are reluctant to counsel patients about personal health behaviors or that patients do not comprehend the messages that are being delivered.

### Knowledge of CVD Symptoms

Knowing and recognizing the warning signs of heart attack and stroke are essential in getting rapid treatment.<sup>9</sup> Treatment during or soon after an acute attack can mean the difference between death or permanent disability and recovery, especially with newer treatments and medications available.<sup>7</sup>

Table 5 lists the BRFSS results regarding respondents' knowledge of CVD symptoms. A large majority of people knew the most common warnings signs: 91% knew that chest or arm pain or discomfort could signal a heart attack; 90% knew that numbness, weakness, or loss of balance could be a stroke. Most (85%) also knew to call 911 as the first response to a suspected CVD event. However, less than half of respondents knew that pain or discomfort in the jaw, neck, or back could also be heart attack symptoms. Only 15% recognized all the main signs of a heart attack and only 16%, those of a stroke.

### Discussion and Conclusions

The 2003 BRFSS survey results indicate limited success with current prevention efforts. People with CVD are more likely to have had their

**Table 4. Risk Factors: Prevention Advice from a Health Professional, 2003\***

<b>Within the past year:</b>	<b>% (95% CI)</b>	
<b>Advised to quit smoking</b>		
With CVD	57	(41–72)
Without CVD	37	(32–42)
<b>Overweight/obese &amp; advised to lose weight</b>		
With CVD	25	(19–32)
Without CVD	18	(16–21)
<b>Advised to eat less high fat or high cholesterol food</b>		
With CVD	45	(32–60)
Without CVD	20	(18–22)
<b>Advised to eat more fruits and vegetables</b>		
With CVD	55	(41–69)
Without CVD	30	(27–32)
<b>Advised to get more physical activity</b>		
With CVD	45	(34–56)
Without CVD	33	(31–36)

\*Age adjusted to year 2000 standard population

cholesterol levels checked within the past 5 years, are taking aspirin to lower risk, and are trying to improve their diets. BRFSS results also show, however, that smoking levels remain too high and that, in spite of good intentions, many people are still not meeting the national goals for nutrition and physical activity.

Moreover, these data show that those most likely to adopt preventive behaviors are in the “With CVD” group. While this finding may be encouraging in terms of secondary prevention, much improvement is needed in the area of primary prevention. The challenge that remains is to promote preventive behavior change among the general population before they suffer a CVD event. Prevention advice from physicians and other health professionals has been shown to facilitate adoption of healthful behaviors when delivered in a timely and effective manner that includes verification that the message has been received and understood.<sup>5</sup>

Along with smoking, poor nutrition and physical inactivity are among the most detrimental behaviors that affect cardio/

cerebrovascular health.

They contribute not only to weight problems but to other CVD risk factors as well. Regular moderate physical activity and proper diet can help control blood cholesterol, blood pressure, and diabetes.<sup>2-5</sup> The more vigorous the activity, the more benefits are gained, but even 30 minutes of a moderate activity like walking on most days of the week will confer benefits. For people who are overweight or obese, losing even 10 to 20 pounds can decrease heart disease risk. Maintaining a body mass index (BMI) of 18.5 to 24.9 is recommended for optimal health.

**Table 5. Recognition of CVD Symptoms**

	<b>% “yes” (95% CI)</b>	
<b>Heart attack</b>		
Pain or discomfort in jaw, neck, or back	44	(44–48)
Feeling weak, lightheaded, or faint	68	(66–70)
Chest pain or discomfort	91	(90–92)
Sudden trouble seeing in one or both eyes	36	(34–39)
Pain or discomfort in the arms or shoulders	85	(83–87)
Shortness of breath	84	(83–86)
Recognizes all heart attack symptoms	15	(14–17)
<b>Stroke</b>		
Sudden confusion or trouble speaking	80	(78–82)
Sudden numbness or weakness of face, arms, or legs (especially on one side)	90	(89–91)
Sudden trouble seeing in one or both eyes	62	(59–64)
Sudden chest pain or discomfort	42	(40–45)
Sudden trouble walking, dizziness, or loss of balance	81	(79–83)
Severe headache with no known cause	59	(57–61)
Recognizes all stroke symptoms	16	(15–18)
Would call 911 as first response if <b>heart attack OR stroke</b> is suspected	85	(83–87)

Sample size=2,537

### Ways to Support Preventive Behaviors

- Employers can be encouraged to offer fitness facilities or work-out space at the worksite.
- Employers can provide incentives for healthy behaviors among employees, eg, company sports teams and health fairs.
- Local health departments and community groups can provide community education and resources such as nutrition education, improved parks and recreation facilities, and supportive community design.

Over the past decade, overweight/obesity has emerged as the most serious threat to cardiovascular health. A trend analysis of data from 1991 through 2003 shows that the prevalence of over-weight/obesity is increasing in Texas at an alarming rate; 62% of Texans are now overweight, and 25% are obese. This increase is also driving up the rates of high blood pressure, cholesterol, and diabetes. The potential long term, far reaching consequences of this obesity epidemic underscores the importance of targeting overweight and obesity for increased prevention efforts.

In February 2005, CDC reported results of a BRFSS analysis of 2003 national data for CVD risk factors. This analysis indicated that around 37% of survey respondents had two or more risk factors for CVD and that considerable disparities existed among socioeconomic groups and racial/ethnic populations. Analysis of Texas data indicates that the situation is comparable in this state. CDC recommends that public health programs improve identification of persons with multiple risk factors and focus interventions on populations that are disproportionately affected.

It is also important that more people learn to recognize the lesser-known symptoms of a heart attack and stroke, and that they get medical assistance immediately after recognizing these symptoms (eg, call 911).<sup>9</sup> Currently about 47% of heart attack and stroke victims die before medical personnel arrive.

Ongoing public health efforts have been initiated to encourage CVD prevention.<sup>10,11</sup> On the national level, a number of organizations

worked with CDC to develop the “Public Health Action Plan to Prevent Heart Disease and Stroke,” which includes recommendations on health promotion and prevention efforts over the next two decades. Also, CDC currently funds state-based heart disease and prevention programs in 32 states.<sup>11</sup> The Texas program facilitated the collaboration of the Texas Council on Cardiovascular Disease and Stroke and a number of stakeholder groups to develop and implement the “Texas State Plan to Reduce Cardiovascular Disease and Stroke, May 2002” and related programs.

Recent data have shown improvement in CVD treatment, as indicated by a 12% reduction in the age-adjusted rate for CVD mortality in Texas from 1999 to 2003. However, CVD remains the leading cause of death in this state. Also, more people than ever are living with the disease and are at increased risk for disability and lowered quality of life.<sup>1,6</sup>

The economic and personal costs of CVD remain far too high. Therefore, the cooperative efforts noted above must continue to receive the resources needed to maintain the strides made in reducing the burden of CVD and to address the prevention challenges that remain.

The key is to focus prevention efforts on evidence-based strategies that address risk in a way that reaches the individual who is making behavioral and treatment choices. Public policy and system changes must target individuals where they live, work, congregate, and receive care. By affecting change in community plans, codes, laws, and regulations -- public health programs can promote environments conducive to effective CVD prevention.

## Resources

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### Healthy People 2010 CVD Goals

- Improve cardiovascular health and quality of life through prevention, detection, and treatment of risk factors
- Identify and treat heart attacks and strokes early
- Prevent recurrent cardiovascular events

*Additional information about CVD and BRFSS is available online:*

[www.cdc.gov/nccdphp/aag/aag\\_cvd.htm](http://www.cdc.gov/nccdphp/aag/aag_cvd.htm)  
[www.cdc.gov/nccdphp/aag/aag\\_brfss.htm](http://www.cdc.gov/nccdphp/aag/aag_brfss.htm)  
[www.tdh.state.tx.us/chronic/](http://www.tdh.state.tx.us/chronic/)  
[www.tdh.state.tx.us/wellness/](http://www.tdh.state.tx.us/wellness/)  
[www.cdc.gov/nccdphp/promising\\_practices/heart/opportunities.htm](http://www.cdc.gov/nccdphp/promising_practices/heart/opportunities.htm)

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