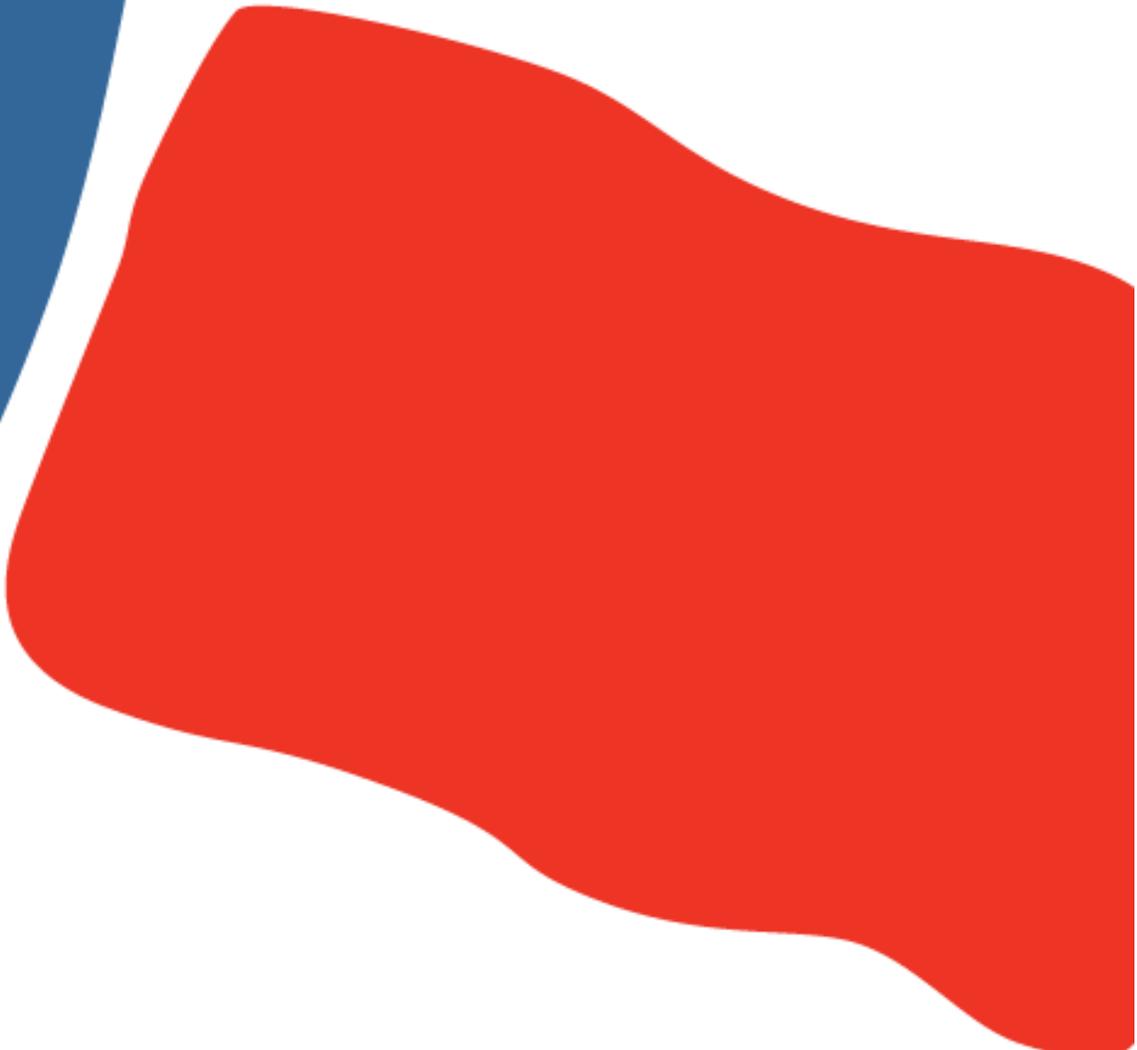




TEXAS PLAN TO REDUCE
CARDIOVASCULAR DISEASE
AND STROKE
2013-2017



Foreword

The fourth edition of the *Texas Plan to Reduce Cardiovascular Disease and Stroke (Plan)* provides a set of goals and strategies for addressing heart disease and stroke in Texas. The 2013 *Plan* has been updated with the help of community stakeholders from across the state and a group of experts representing state and community-level public health agencies, the health care industry, worksite wellness professionals, the non-profit and academic sectors. These stakeholders provide a wide range of local and organizational perspectives. Their efforts helped identify heart disease and stroke prevention, detection, and treatment priorities to address in Texas.

The *Plan* provides an overview of the current state of cardiovascular disease and stroke in Texas and identifies priority objectives for organizations to incorporate into their strategic plans. The *Plan* includes summary of findings from the heart disease and stroke prevention system assessment, as well as information on mortality, morbidity, prevalence, and related risk factors.

Many strategies will be coordinated at the state level, but others can only be effectively implemented at the local or organizational level. The success of this *Plan* and of heart disease and stroke prevention efforts in Texas requires partners in all sectors and at all levels to work collaboratively.

The Texas Council on Cardiovascular Disease and Stroke was established by the Legislature and its members are appointed by the Governor. The Council continues to work with stakeholders to implement the *Plan* and promote the mission of the Council: that is, “to educate, inform and facilitate action among Texans to reduce the human and financial toll of cardiovascular disease and stroke.”

The Texas Cardiovascular Disease and Stroke Partnership, a group of dedicated stakeholders from all across Texas, has worked diligently to provide

information and expert advice on the development of this updated *Plan*. The Partnership’s Steering Committee is committed to the *Plan*’s successful implementation and invites you to join in its efforts to reduce heart disease and stroke in Texas.

The Cardiovascular Disease and Stroke Program of the Texas Department of State Health Services’ Health Promotion and Chronic Disease Prevention Section provides technical assistance, training and consultation on the development of policy and environmental change strategies to decrease risk factors for heart disease and stroke and encourage Texans to establish a heart and stroke healthy lifestyle. The Program works collaboratively with the Texas Council on Cardiovascular Disease and Stroke and the Texas Cardiovascular Disease and Stroke Partnership to educate, inform and facilitate action among Texans to reduce the human and financial toll of cardiovascular disease and stroke.

Please use this *Plan* for developing your own cardiovascular disease and stroke program objectives. Implement the evidence-based strategies described in this report to bring about improved cardiovascular and brain health for all Texans. Your participation in and adoption of the strategies outlined in this *Plan* are critical to the success of this collaborative effort.

Acknowledgements

This *Plan* was updated through joint planning meetings and coordination among organizations participating in the Texas Cardiovascular Disease and Stroke Partnership, the Texas Council for Cardiovascular Disease and Stroke, and the Cardiovascular Disease and Stroke Program of the Texas Department of State Health Services.

A number of staff from the Department of State Health Services played key roles in coordinating meetings, facilitating planning, and writing and editing drafts of the *Plan*.

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The majority of data for the *Plan* were obtained from the Center for Health Statistics, Texas Department of State Health Services.

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Executive Summary

Cardiovascular disease (CVD) and stroke are the number one and number three causes of death in Texas.⁴ However, these chronic diseases are largely preventable through the reduction of modifiable risk factors. Prevalence, as well as CVD and stroke-related morbidity and mortality rates, can be reduced by: increased physical activity; good nutrition; tobacco cessation; control of high blood pressure, high blood cholesterol and diabetes; and reduction of overweight and obesity.

The Texas Plan to Reduce Cardiovascular Disease and Stroke 2013 update (Plan) was developed through collaboration between the Texas Council on Cardiovascular Disease and Stroke and the Texas Cardiovascular Disease and Stroke Partnership. It provides a set of goals, objectives, and strategies for reducing morbidity and mortality related to heart disease and stroke in Texas.

The *Plan* is modeled after the Coordinated Chronic Disease State Plan Framework and outlines a comprehensive strategy through four overarching focus areas. The focus areas include Strategies that Support/Reinforce Healthy Behavior; Community-Clinical Linkages Enhancements; Health Systems Interventions; and Surveillance and Epidemiology. Each focus area consists of a goal and accompanying objectives and strategies that tend to be cross-cutting.

Goals of the 2013 *Plan* include:

- **Strategies that Support/Reinforce Healthy Behavior:** To establish and promote environments that support the prevention of heart disease and stroke through healthy eating, physical activity, and tobacco-free lifestyles for all Texans, with an emphasis on access to resources and priority populations.
- **Community Clinical Linkages Enhancements:** To promote partnerships between clinical and community groups in Texas to provide enhanced and coordinated patient care.
- **Health Systems Interventions:** To promote capacity and infrastructure changes within the health delivery system to effectively prevent, treat, and manage heart disease and stroke for all Texans.
- **Surveillance and Epidemiology*:** To collect comprehensive heart disease and stroke data that are readily available to assess, monitor, and describe the burden of heart disease and stroke in Texas.

*Note: Surveillance and epidemiology strategies are included in all *Plan* objectives to provide data to monitor progress in priority areas and towards targets.

Thirty sets of objectives, grouped by common desired outcomes, were identified for the *Plan*. The objectives reflect Healthy People 2010 and 2020 objectives for improving the health of the nation and are specific to heart disease and stroke priorities in Texas. The *Plan* includes objectives that are largely measurable through existing data sources and are deemed realistic and attainable through coordinated efforts and effective use of available resources.

The Texas Cardiovascular Disease and Stroke Partnership, the Texas Council on Cardiovascular Disease and Stroke, and the Cardiovascular Disease and Stroke Program of the Texas Department of State Health Services will collaborate to implement evidence-based strategies to achieve identified targets by the year 2017.

Call to Action

Stakeholders at all levels, including state, regional or community, should be knowledgeable about CVD and stroke, as well as the diseases' impact on individuals' well-being and economic and societal well-being in Texas. We urge you to use this *Plan* to determine the role and direction that your organization decides to assume as part of a unified, coordinated effort to reduce premature death from CVD and stroke, as well as to improve the quality of life for Texans.

Help empower healthy Texans for a lifetime!

Introduction

Cardiovascular disease (CVD) and stroke are the number one and number three causes of death in Texas.⁴ Together, heart disease and stroke account for nearly three of every ten deaths in the state.⁴ In addition to the human consequences, the financial burden of CVD and stroke in Texas is substantial. Hospitalization charges related to CVD and stroke amounted to nearly \$20 billion in 2010⁵, and the following trends suggest this problem will continue to worsen in the future:

- ❑ The aging of the population will remain an important factor as older adults reach ages where CVD and stroke are the most prevalent.
- ❑ The incidence of morbid obesity in Texas is rising; nearly one in three Texans is obese, and two-thirds of Texans are overweight.³
- ❑ Health care, school, and work environments are not keeping pace with the need for healthier food choices and a community environment conducive to increasing physical activity and access to healthy food options.
- ❑ Medical costs associated with CVD and stroke are on the rise due to an increase in per capita health care spending; total direct health care costs related to CVD are expected to triple by 2030, and direct health care costs related to stroke are expected to increase by 238 percent over the next 20 years.³⁰

In response to these challenges, the Texas Cardiovascular Disease and Stroke Partnership (Partnership) was created to work in collaboration with the Texas Council on Cardiovascular Disease and Stroke and the Cardiovascular Disease and Stroke Program of the Texas Department of State Health Services (DSHS) to update and implement a statewide plan for addressing CVD and stroke in Texas.

The 2013 *Texas Plan to Reduce Cardiovascular Disease and Stroke (Plan)* not only reflects a new set of goals, objectives, and strategies related to improving cardiovascular and brain health in Texas but includes key implementation activities identified by the Centers for Disease Control and Prevention (CDC) as essential to implementing a comprehensive public health strategy (see Figure 1):

- **Communicating Effectively:** The Texas public health community should effectively communicate the urgency and promise of preventing heart disease and stroke and their risk factors through public information and education utilizing appropriate technology to reach underserved populations.
- **Promoting Strategic Leadership:** State and local governments, public health agencies, and community leaders should foster effective leadership and partnerships to prevent heart disease and stroke by strengthening existing relationships with partners and forging new ones with other partners.
- **Taking Action:** Community leaders in Texas should take action to promote desirable social and environmental conditions and promote partnerships to effectively translate current knowledge into successful outcomes.

- **Strengthening Capacity:** State and local governments, public health agencies, and community leaders must work to build local and statewide capacity to address the health and wellness of Texans by expanding partnerships and utilizing resources in a more coordinated and effective way.
- **Evaluating Impact:** Resources should be dedicated to developing new data systems, expanding and standardizing existing data sources, and effectively monitoring health indicators related to CVD and stroke to monitor progress made with interventions implemented.
- **Advancing Policy:** Critical policy issues must be addressed, and effective public policy should be implemented to ensure resources are available, the environment is conducive to the health and wellness of Texans, and all citizens have access to quality preventive services and treatments.
- **Promoting Regional and Global Partnerships:** State and local governments, public health agencies, and community leaders in Texas should engage in partnerships to effectively use resources for optimal outcomes related to cardiovascular health promotion and CVD prevention.¹



Figure 1: Process of Effective Implementation of a Comprehensive Public Health Strategy

Effective implementation of comprehensive public health strategies begins with effective communications and continues through an iterative process involving strategic leadership, action, strengthening capacity, evaluating impact, advancing policy, and building partnerships.

The State of Cardiovascular Disease and Stroke in Texas

Cardiovascular disease (CVD) refers to a group of diseases that targets the heart and blood vessels. It is the result of complex interactions among a variety of factors including: multiple inherited traits, environmental factors, diet and exercise, body mass index, blood pressure, cholesterol levels, and tobacco use. Its etiology suggests that CVD is largely preventable; and, when diagnosed early, disease symptoms and risk factors can often be mitigated with lifestyle changes and/or treatment with medication. Common forms of CVD include high blood pressure, coronary heart disease, stroke, and congestive heart failure.

A major cause of CVD is atherosclerosis, a general term describing the thickening and hardening of the arteries. It is characterized by deposits of fatty substances, cholesterol, and cellular debris on the inner lining of an artery. The resulting buildup is called plaque, which can partially or completely block a vessel and may lead to heart attack or stroke. The most prevalent forms of heart disease and stroke are ischemic heart disease and ischemic stroke. These two forms are caused by narrowed or blocked arteries resulting in reduced blood supply to the heart or brain. This *Plan* focuses primarily on these two types of CVD.

According to the American Heart Association (AHA), over 82 million, or one out of every three Americans, have one or more types of CVD.² In 2010, about 1.5 million Texas adults ages 18 years and older reported that they had been diagnosed with heart disease or stroke.^{3,4}

Cardiovascular disease continues to be the number one cause of death in Texas and in the United States (U.S.).^{4,6} Over 2,200 Americans die from CVD each day.² An estimated 30.5 percent of all deaths in Texas in 2010 were due to CVD.⁴

However, progress has been made. From 2000 to 2010, age-adjusted mortality rates (number of deaths per 100,000 people) due to CVD in Texas and the U.S. steadily declined. The death rate associated with CVD in Texas declined 30.7 percent during this ten year period. Factors affecting this decline include more effective medical treatment and an increasing emphasis on controllable risk factors.^{2, 6}

While mortality rates have declined, the financial burden associated with CVD continues to grow. Together, heart disease and stroke are the number one group of conditions draining health care resources, costing more than any other diagnostic group. According to the AHA, the estimated direct and indirect costs of CVD in the U.S. for 2008 was \$297.7 billion, and the cost of CVD is projected to triple from 2010 to 2030.²

Diseases of the Heart

In Texas, diseases of the heart claimed over 38,090 lives in 2010.⁴ Heart disease has been the leading cause of death in Texas since 1940 and currently accounts for more than one in four (22.9%) deaths. Diseases of the heart include acute rheumatic fever, chronic rheumatic heart diseases, hypertensive diseases, and ischemic heart diseases. The *Plan* focuses primarily on ischemic and hypertensive heart diseases, which account for 73 percent of deaths from heart disease in Texas and much of the financial burden. Hospital charges for ischemic heart disease in Texas in 2010 exceeded \$6 billion.⁵

The first appearance of heart disease, often presenting as cardiac arrest, can be sudden and devastating, but cardiac arrest can be reversed if treated within a few minutes. Optimal treatment to restore a normal heartbeat occurs through electric shock to the heart (defibrillation) within three to five minutes. With every minute that passes without cardiopulmonary resuscitation (CPR) and defibrillation, the chance of survival is reduced by seven to 10 percent.⁷ For this reason, bystander recognition of the signs and symptoms of cardiac arrest and an immediate call to 911 are critical to improve patient outcomes. In 2009, while 85.9 percent of Texans

recognized 911 as the first emergency response option for heart attack and stroke, only 11.8 percent of Texas adults could correctly identify all signs and symptoms of a heart attack.³

In the event of cardiac arrest, CPR and use of an automated external defibrillator (AED) should begin immediately. The availability of AEDs is becoming more widespread as many municipal and state governments are instituting mandates for AED programs in public sites such as schools, shopping malls, and other public places. New recommendations for CPR performed by bystanders include high quality chest compressions by pushing hard and fast in the middle of the chest with minimal interruptions.⁸ Education to promote the rapid recognition of the signs and symptoms of cardiac arrest and stroke, calling 911, and promotion of CPR training and AED availability are a major focus of public education and training in the 2013 *Plan*.

Stroke

Stroke is the third leading cause of death in Texas and the fourth leading cause of death in the nation. Over the past decade, the death rate from stroke in Texas declined by approximately 32.6 percent (from 66.6 percent in 2000 to 44.9 percent in 2010).^{2,6} Many more people are surviving strokes but not without consequences. Stroke can leave a range of disabilities from loss of speech to paralysis of limbs and other neurological impairments, making stroke a leading cause of long-term disability and a major economic burden in terms of health care cost and lost productivity.² The estimated direct and indirect costs of stroke in the U.S. for 2010 was \$53.9 billion.³⁰ Total hospital charges for stroke in Texas in 2010 exceeded \$2.7 billion.⁵

Fortunately, stroke is preventable. When treated immediately, the damage can be minimized. Timely treatment requires early recognition of signs and symptoms and rapid response. The Behavioral Risk Factor Surveillance System (BRFSS) survey conducted in Texas in 2009 showed that only 21.1 percent of adults in Texas could correctly identify all stroke signs and symptoms (see Table 1).³

In addition to early recognition of stroke signs and symptoms by the public, early and appropriate medical intervention is critical to increase survival and reduce risk of disability. Unfortunately, stroke care in many communities remains inadequate and fragmented, hindered by lack of expertise and coordination within the stroke system of care.⁸ One of the goals in the *Plan* is to support ongoing efforts to improve systems of care that target stroke in Texas.

What is defibrillation?

Most sudden cardiac arrest is caused by ventricular fibrillation (VF), an abnormal heart rhythm. Ventricular fibrillation prevents the heart from pumping blood effectively. Defibrillation is the treatment for VF. Defibrillation delivers an electric shock to the heart that can stop VF and allow the heart to resume a normal rhythm and pump effectively.⁷

Table 1: Recognition of Signs and Symptoms of Stroke in Texas, 2010

Symptoms of Stroke	% of Respondents who Recognized Symptoms of Stroke
Sudden confusion, trouble speaking or understanding	94.9
Sudden trouble seeing in one or both eyes	87.8
Sudden numbness or weakness of the face, arm or leg	97.2
Sudden trouble walking, dizziness or loss of balance and coordination	93.5
Sudden severe headache with no known cause	77.4
Recognized all 5 signs and symptoms	21.1

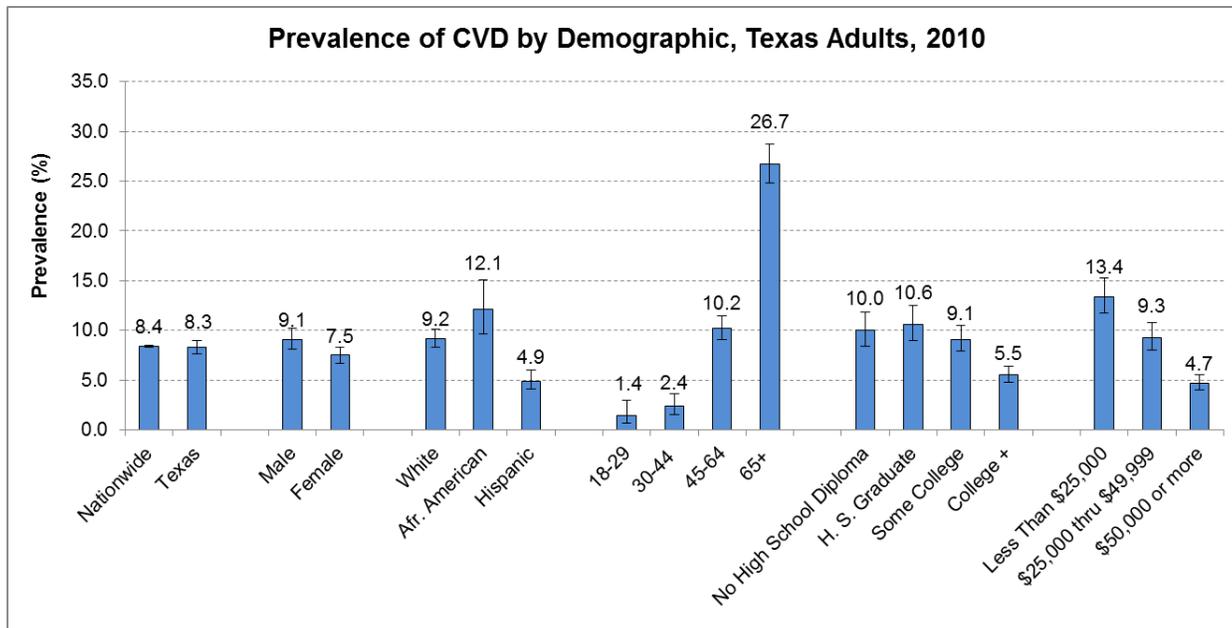
Data source: BRFSS, Center for Health Statistics, TDSHS, 2010

Disparities in Cardiovascular Disease and Stroke

High Risk Populations

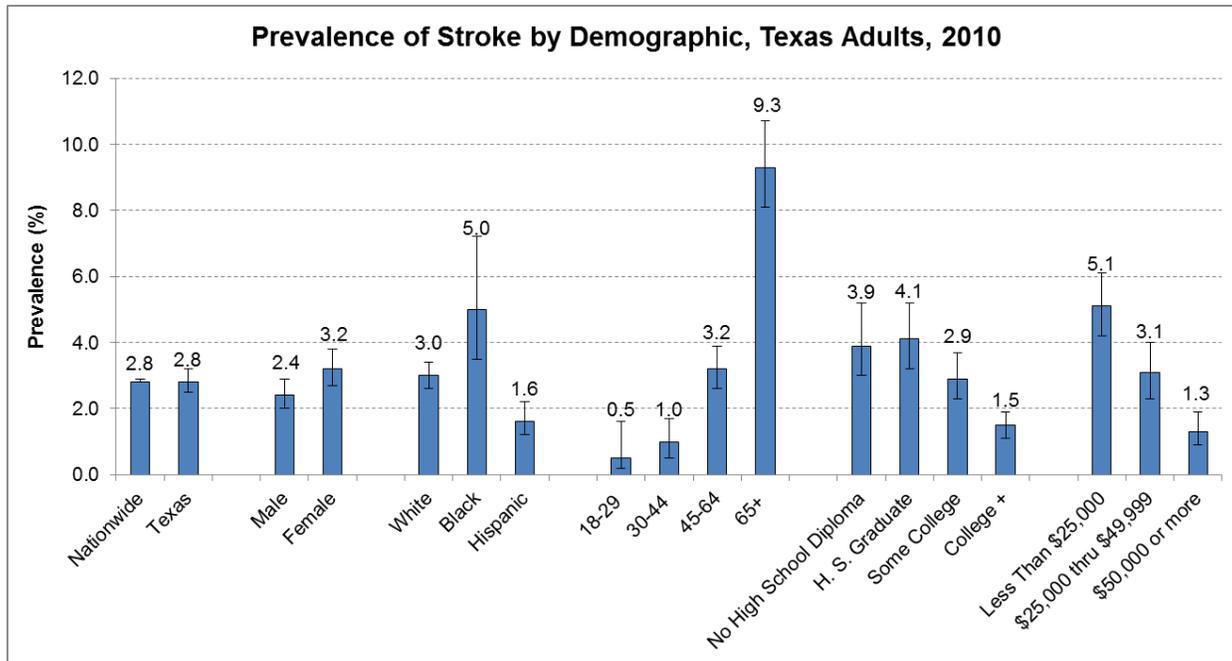
Significant disparities exist among Texans with CVD, stroke, or related risk factors. In general, there is a higher prevalence of CVD and stroke among Texans who are older (especially those ages 65 years and older), earn a lower income, have received less education, are African American, and have multiple risk factors (see Figures 2 and 3).

Figure 2: Prevalence of CVD by Demographic, Texas Adults, 2010



Data source: BRFSS, Center for Health Statistics, TDSHS, 2010

Figure 3: Prevalence of Stroke by Demographic, Texas Adults, 2010



Data source: BRFSS, Center for Health Statistics, TDSHS, 2010

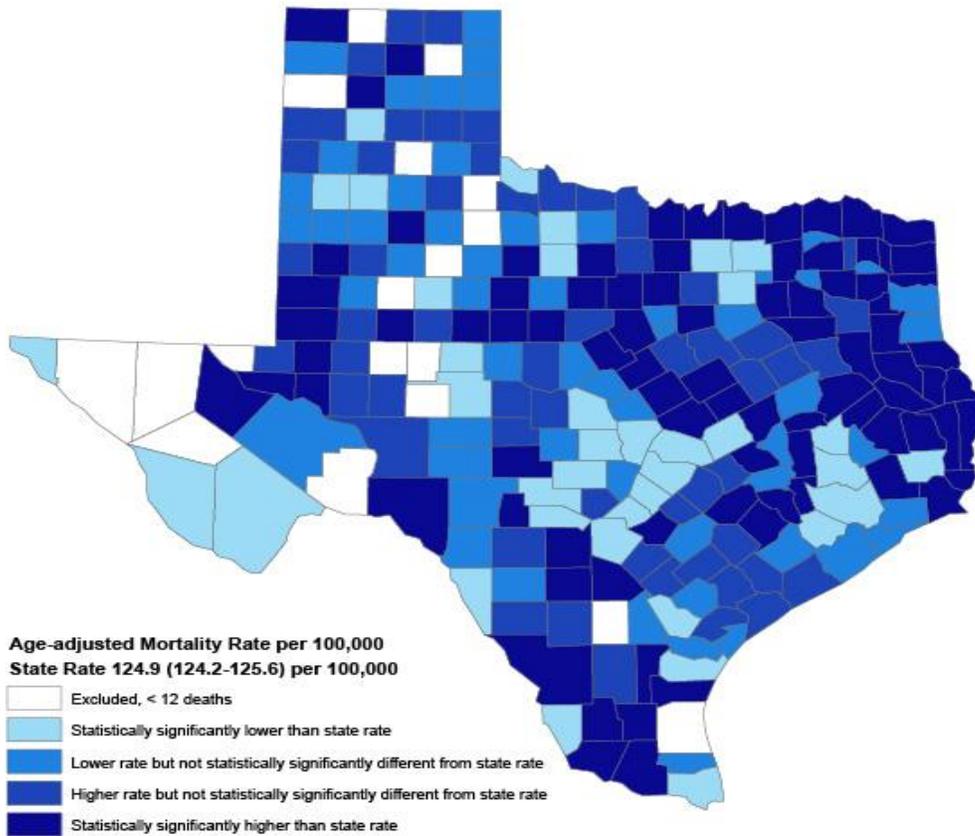
In addition, there is a higher risk of death from CVD and stroke among these at-risk individuals. While CVD and stroke mortality rates have generally declined for most populations, disparities persist. Between 2006 and 2010, ischemic heart disease mortality rates among Whites, African Americans, and Hispanics showed significant decline. However, the highest mortality rate from CVD and stroke still occurs in the African American population, both in Texas and in the U.S. In Texas, the 2010 age-adjusted mortality rate for ischemic heart disease among African Americans was 132.9 per 100,000 compared to 118.5 per 100,000 for Whites and 94.9 per 100,000 for Hispanics.⁴

In 2010, the age-adjusted mortality rate for stroke among African Americans was 1.3 times higher than Whites (60.0 per 100,000 versus 44.7 per 100,000), 1.6 times higher than Hispanics (60.0 per 100,000 versus 38.0 per 100,000), and 1.8 times higher than other ethnic groups (60.0 per 100,000 versus 34.2 per 100,000) in Texas.⁴

Geographic differences in mortality rates associated with ischemic heart disease and stroke among Texas urban, rural, and border regions are attributed to demographic differences. The highest age-adjusted mortality rates associated with heart disease are concentrated in East and Northeast Texas and the border region. The highest age-adjusted mortality rates associated with stroke are concentrated in Northeast Texas (see Figures 4 and 5).

Figure 4: Age-adjusted Mortality Rates for Ischemic Heart Disease by County, Texas, 2006-2010

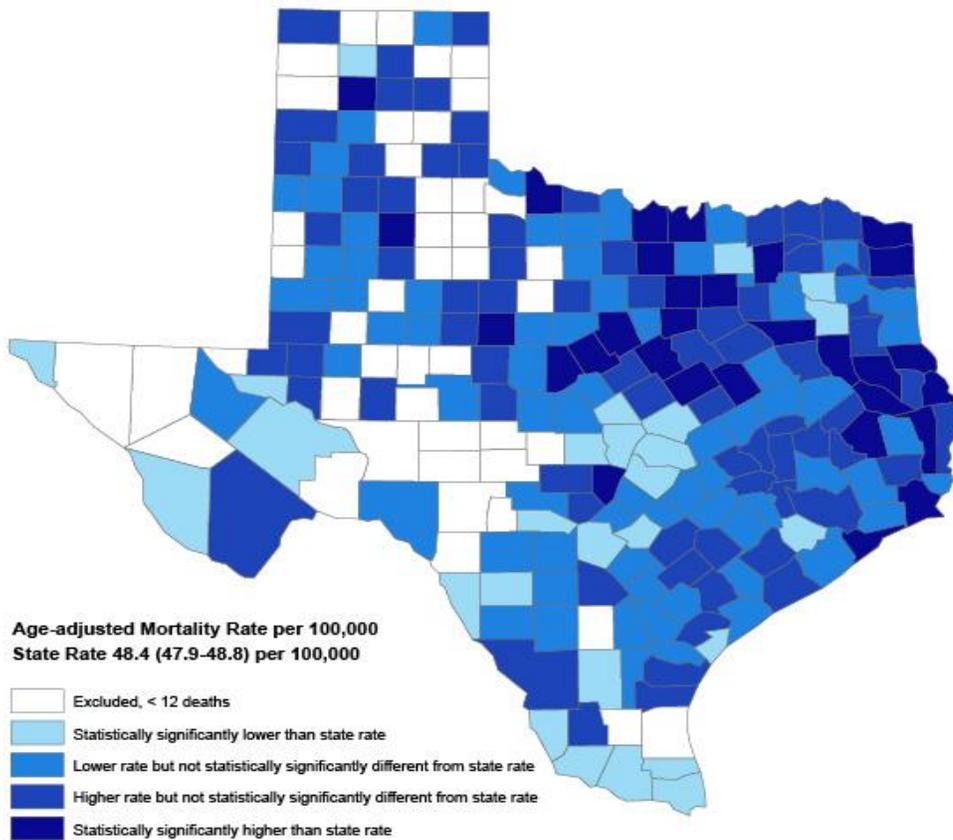
Age-adjusted Mortality Rates for Ischemic Heart Disease, Texas, 2006-2010



*Data Source: Texas Vital Statistics Unit, DSHS
Created by: GIS, Center for Health Statistics, DSHS*

Figure 5: Age-adjusted Mortality Rate for Stroke by County, Texas, 2006-2010

Age-adjusted Mortality Rate for Stroke, Texas, 2006-2010



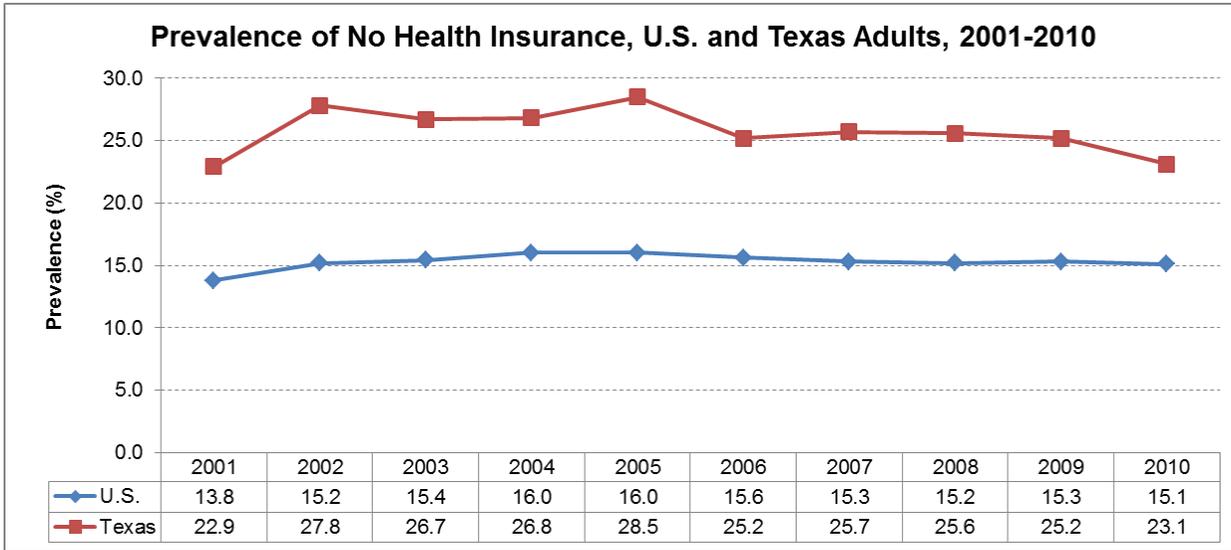
Data Source: Texas Vital Statistics Unit, DSHS
Created by: GIS, Center for Health Statistics, DSHS

Access to Care

Barriers to accessing care include, but are not limited to: cost of care; geographic location; lack of insurance; language barriers; and not having a usual source of primary care. Populations that have decreased access to care may be referred to as *underserved*. Among Texans ages 18 years and older who have CVD or stroke in 2010, 14.8 percent stated that they did not have any type of health care coverage; 20.55 percent could not see a doctor due to the cost; and 26.1 percent did not have a routine checkup within the past year.³

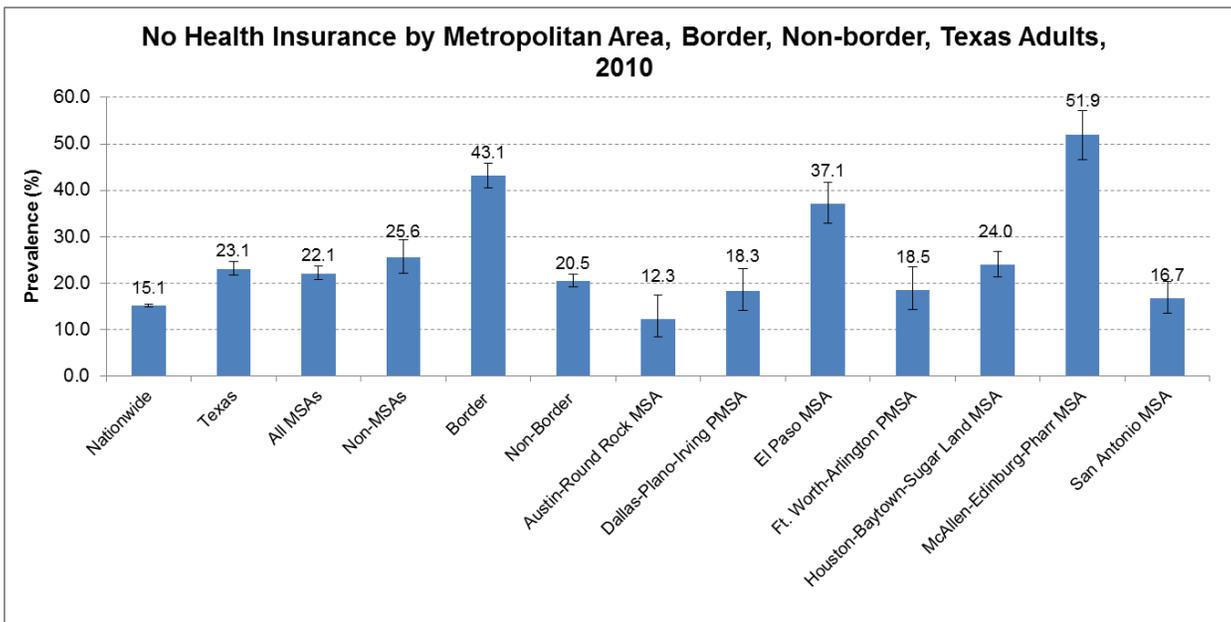
Texas has consistently had a higher rate of health uninsurance compared to the U.S. (see Figure 6).⁹ Compared to other states, Texas currently ranks lowest for the number of residents who have health insurance.⁹ According to Texas BRFSS 2010, Public Health Service Regions along the border and in East Texas have particularly high rates of uninsurance (see Figure 7). Hispanics (46.2%) and African Americans (25.3%) are significantly more likely to lack health care coverage than Whites (11.6%). Younger Texas adults are more likely to be uninsured than older Texans, and Texans with lower education levels and lower annual income have a greater likelihood of being uninsured (see Figure 8).³

Figure 6: Prevalence of No Health Insurance, U.S. and Texas Adults, 2001-2010



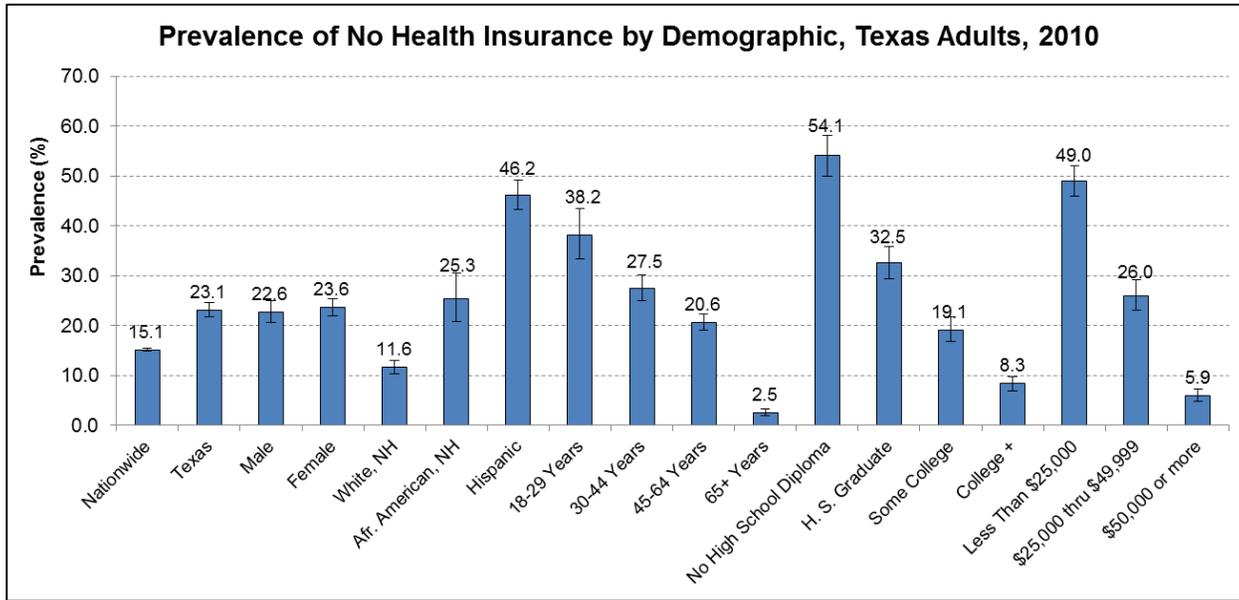
Data Source: BRFSS, Center for Health Statistics, TDSHS, 2010

Figure 7: No Health Insurance by Metropolitan Area, Border, Non-border, Texas Adults, 2010



Data source: BRFSS, Center for Health Statistics, TDSHS, 2010

Figure 8: Prevalence of No Health Insurance by Demographic, Texas Adults, 2010



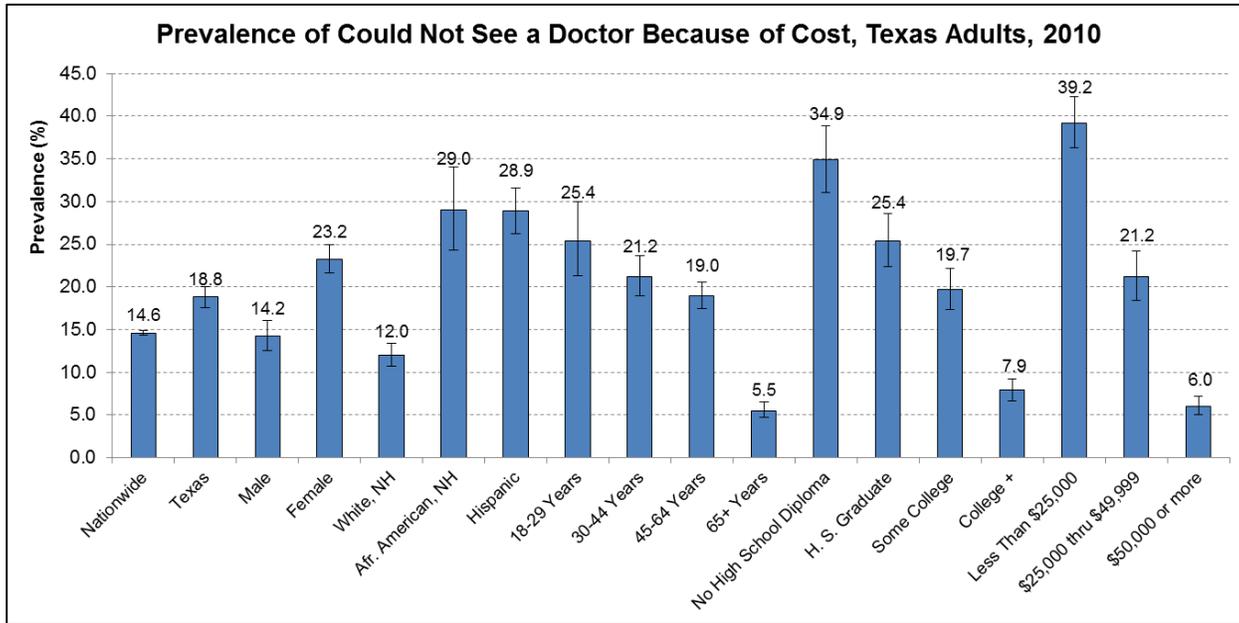
Data source: BRFSS, Center for Health Statistics, TDSHS, 2010

Secondary prevention of CVD and stroke relies on the early detection and management of risk factors such as high blood pressure, high blood cholesterol, diabetes, and obesity. Not having a usual source of primary health care is a barrier to secondary prevention. In 2010, Texas (38.9%) had significantly higher rates of adults who had not had a routine health check-up within the past year compared to the national average (31.9%).³

Cost is often a barrier to accessing routine health care, even for those with insurance. Texas (18.8%) had a significantly higher rate of adults who could not see a doctor in 2010 due to cost compared to the national average (14.6%). Females had significantly higher prevalence for inability to see a doctor due to cost than males. Hispanics (29.0%) and African Americans (28.9%) had a higher prevalence for inability to see a doctor due to cost than Whites (12.0%). Adults in the younger age groups had significantly higher prevalence for inability to see a doctor due to cost than those over 65 (see Figure 9).³

Access to long term care, including nursing home care, home health care, adult day care, assisted living, and hospice care is a critical and growing concern for all Americans as the number of elderly people continues to rise. Victims of both cardiac events and strokes often require post-hospital rehabilitation, and stroke victims left with disabilities require long term help to perform activities of daily living. Financial barriers and limited availability of services restrict access to these services. Addressing access to health care for all Texans will require system-wide policy changes.

Figure 9: Prevalence of Could Not See a Doctor Because of Cost, Texas Adults, 2010



Data source: BRFSS, Center for Health Statistics, TDSHS, 2010

Addressing Health Disparities

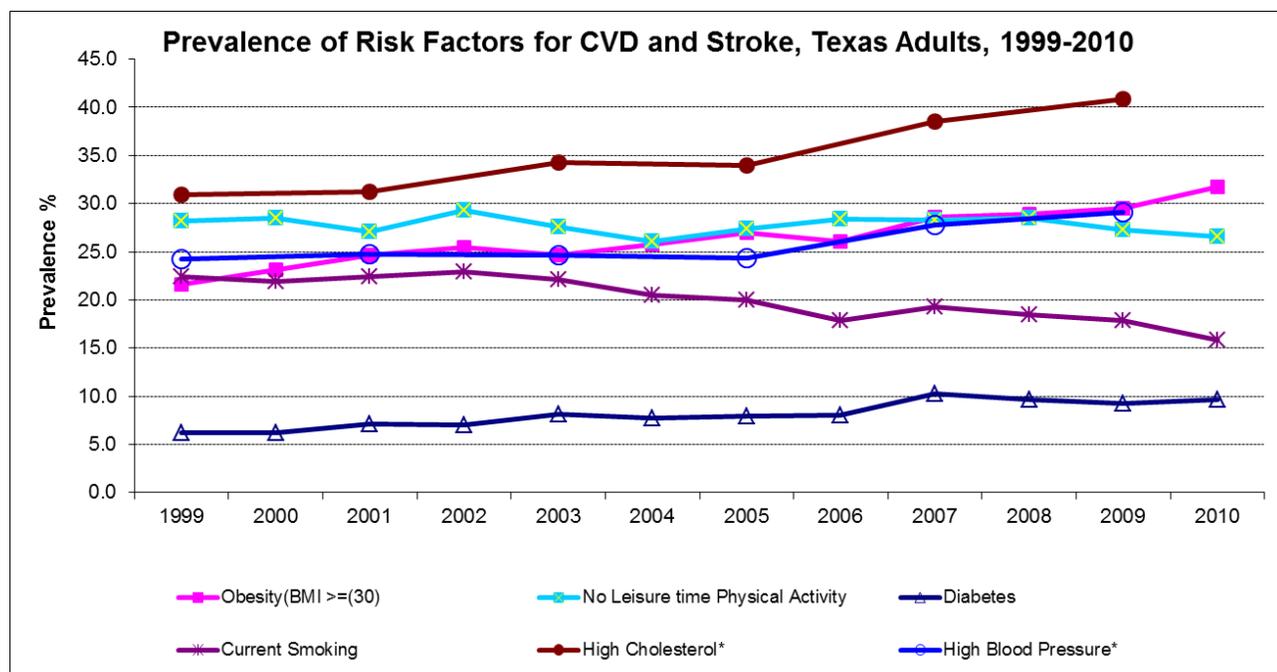
Addressing disparities in morbidity and mortality from CVD, stroke, and related risk factors must be a priority for all stakeholders working in these areas. The 2013 *Plan* includes a new objective related to identifying health disparities and at-risk populations. In addition, new strategies promote culturally appropriate communication in health care settings, use of non-traditional partners such as community health workers in health programming and health care settings, and access to underserved populations. Addressing disparities through the implementation of culturally competent, evidence-based strategies that effectively reach priority populations is a focus of the *Plan*.

Improving access to care for high risk populations and the underserved should be a priority for all programs working to reach Texans for the prevention, diagnosis, and treatment of CVD and stroke and related risk factors.

Risk Factors for Cardiovascular Disease and Stroke

There are several major risk factors that increase a person's chance of developing CVD. Many of these risk factors are modifiable through primary prevention measures such as eating a healthy diet, engaging in regular physical activity, maintaining a healthy weight, and avoiding tobacco use and exposure. Others are modifiable through secondary prevention measures such as treating and controlling high blood pressure and high cholesterol, weight loss for overweight and obese individuals, and tobacco cessation for smokers. Though modifiable, many risk factors for CVD and stroke in Texas have been on the rise over the past decade (see Figure 10).

Figure 10: Prevalence of Risk Factors for CVD and Stroke, Texas Adults, 1999-2010



An examination of the trends in modifiable risk factors over the past decade in Texas demonstrates an increase in the prevalence of high cholesterol, obesity, diabetes, and high blood pressure. Rates of individuals getting no leisure time physical activity have remained relatively level. Smoking rates have decreased since 1995, and while data showed an increase in the estimated number of adults who smoke from 2006 to 2007, a decreasing trend was observed from 2007 to 2010.³

* Data not available for 2010

Data source: BRFSS, Center for Health Statistics, TDSHS, 2010

High Blood Pressure

High blood pressure, also known as hypertension, affects one in three Americans, or more than 76 million people in the U.S.² In 2009, about three out of ten (29.1%) Texas adults reported that they had been diagnosed with high blood pressure.³ Hypertension rates for those ages 65 and older are over 60 percent. As the population ages, the prevalence of high blood pressure will increase unless broad and effective preventive measures are implemented.²

In addition to physical consequences, high blood pressure is costly for the nation and the state. The total annual direct and indirect cost of high blood pressure to the U.S. economy in 2008 was \$50.6 billion.² In Texas in 2010, hospital charges for high blood pressure exceeded \$1 billion.⁵

High blood pressure can be caused by many different medical conditions, including chronic kidney disease, primary aldosteronism, renovascular disease, coarctation of the aorta, and thyroid or parathyroid disease; however, many risks for high blood pressure are modifiable.¹⁰ Obesity, excessive alcohol consumption, smoking, lack of physical activity, and a diet high in sodium are all risk factors for high blood pressure.³¹

The relationship between blood pressure and the risk for CVD is well established and independent of other risk factors. High blood pressure is a factor in 69 percent of first-time heart attacks, 77 percent of first-time strokes,

and 74 percent of heart failures.² The higher the blood pressure, the greater the risk for heart attack, heart failure, and stroke. Blood pressure is classified according to systolic and diastolic readings as normal, pre-hypertension or hypertension stages one or two (see Table 2). The presence of pre-hypertension signals the need for increased education and lifestyle changes to prevent the onset of hypertension.¹⁰

Table 2: Blood Pressure Classification

Blood Pressure Classification		
Blood Pressure Classification	Systolic (mmHg)	Diastolic (mmHg)
Normal	< 120	And < 80
Prehypertension	120-139	Or 80-89
Stage 1 Hypertension	140-159	Or 90-99
Stage 2 Hypertension	≥ 160	Or ≥ 100

Adapted from The 7th Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure, DHHS, 2003

Adoption of a healthy lifestyle is critical for the prevention of high blood pressure and is an integral part of the management of hypertension. Lifestyle changes include weight reduction, adoption of the Dietary Approaches to Stop Hypertension (DASH) eating plan, sodium reduction, physical activity, smoking cessation, and moderation of alcohol consumption. Combinations of lifestyle modifications can achieve the best results.¹⁰

Unfortunately, in many cases lifestyle modifications alone are not enough to control high blood pressure. Antihypertensive therapy, frequently with the use of two or more drugs, is often necessary. Antihypertensive therapy has been associated not only with excellent results in controlling high blood pressure but with reductions in the incidence of stroke, heart attack, and heart failure. Lifestyle modifications can enhance the effects of drug therapy and contribute to lower cardiovascular risk.¹⁰

However, even the most effective therapy may fail to control hypertension if the patient does not or cannot adhere to prescribed medication regimens and adopt healthy lifestyle changes. It is important for clinicians to understand cultural differences, individual beliefs, and socioeconomic barriers to following recommendations and to use a patient-centered strategy to achieve mutual goals.¹⁰ Promoting provider adherence to hypertension guidelines through provider training and education, in addition to cultural competency training, may be another key step to increasing high blood pressure control.³²

High blood pressure control is a priority in the 2013 *Plan* and will be a major focus of work in the future for the Cardiovascular Disease and Stroke Program and the Texas Cardiovascular Disease and Stroke Partnership.

High Blood Cholesterol

About four out of ten (40.9%) Texas adults in 2009 had been diagnosed with high blood cholesterol, a major risk factor for heart disease.³ Research indicates that elevated low density lipoprotein (LDL) cholesterol, low high density lipoprotein (HDL) cholesterol, and elevated triglycerides are each independent risk factors for CVD.¹¹ Classifications of LDL, HDL, and total cholesterol and triglycerides are outlined in Table 3.

Current guidelines from the National Cholesterol Education Program (NCEP) recommend a fasting lipoprotein profile (total cholesterol, LDL, HDL, and triglyceride) be measured every five years for adults 20 years and older. Adherence to screening guidelines by health care providers and making patients aware of their cholesterol levels are critical components of efforts to reduce high cholesterol.¹¹

Table 3: Classification of LDL, Total, HDL Cholesterol and Triglycerides (mg/dL)

Classification of LDL, Total, HDL Cholesterol and Triglycerides (mg/dL)	
LDL Cholesterol	Classification
<70	Therapeutic option for very high risk patients
< 100	Optimal
100-129	Near optimal/above optimal
130-159	Borderline high
160-189	High
> 190	Very high
Total Cholesterol	
< 200	Desirable
200-239	Borderline high
≥ 240	High
HDL Cholesterol	
< 40	Low
≥ 60	High
Triglycerides	
< 150	Normal
150-199	Borderline high
200-499	High
≥ 500	Very high

Adapted from Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults, 2001 and the 2004 Update

Reducing risk associated with high blood cholesterol involves reducing lifestyle risk factors such as obesity, physical inactivity, a diet high in saturated fats, excess alcohol consumption, and tobacco use. A diet high in

carbohydrates (more than 60 percent of energy intake), certain diseases, certain drugs, and genetic causes are also associated with abnormal lipoproteins.¹¹

In addition to therapeutic lifestyle changes, treatment with medication therapy may be indicated. LDL lowering drug therapy has been shown to be very effective in reducing risk for CVD.¹¹ Adherence to NCEP guidelines by both patients and providers is key to achieving success in managing cholesterol levels and reducing risk for CVD. The NCEP Expert Panel recommends use of multi-disciplinary methods involving the patient, providers, and the health care delivery system to achieve population level effectiveness for primary and secondary prevention of high cholesterol.¹¹ Increasing the proportion of adults who have been screened for high cholesterol within the past five years and decreasing the proportion of adults with high non-HDL cholesterol levels are objectives of the 2013 *Plan*.

Diabetes

Diabetes, a major risk factor for CVD, is a group of diseases marked by high levels of blood glucose and includes Type 1, Type 2, gestational, and other types resulting from various medical conditions. People with Type 1 diabetes must monitor and control their blood glucose level through insulin administration. Those with Type 2 diabetes can often control their blood glucose through diet, exercise, and oral medication.¹²

It is estimated that nearly 26 million people in the U.S. have diabetes, seven million of whom are still undiagnosed.¹² The prevalence of diabetes in Texas has increased over the past decade from 6.2 percent of the population in 2000 to 9.7 percent in 2010.³ African Americans (16.5%) have a significantly higher prevalence of diabetes in Texas, compared to Whites (8.2%) and Hispanics (11%). However, as the Hispanic population in Texas continues to increase, it is estimated that by 2040, Hispanics will comprise the majority of diabetes cases.³⁵ Diabetes prevalence also increases significantly with age, increasing sharply at age 45 and above.

Diabetes negatively affects the risk of cardiac events in addition to cardiac outcomes. Adults with diabetes have heart disease mortality rates two to four times higher than adults without diabetes, and the risk for stroke is two to four times greater with diabetes. In fact, two out of three people with diabetes die from heart disease or stroke. Due to the relationship between diabetes and CVD, diabetes management is complicated and involves not only control of blood glucose but also of blood pressure and cholesterol levels. Diabetes Self-management Education (DSME) involves providing people with the tools to develop problem-solving and coping skills to manage diabetes on their own. DSME is integral to good outcomes and a high quality of life.¹²

The Texas Diabetes Council, established by the Texas Legislature, is charged with developing and implementing a state plan for diabetes treatment, education, and training. *Changing the Course: A Plan to Prevent and Control Diabetes in Texas, 2012-2013 (Diabetes Plan)* identifies five priorities: advancing public policy; evaluating the impact of diabetes in Texas; promoting comprehensive programs for the prevention of diabetes; increasing public awareness, promoting community outreach and diabetes education; and improving diabetes care and prevention of complications by health care professionals. The Diabetes Prevention and Control Branch of the Texas DSHS undertakes and sponsors a number of key activities that support the five priorities of the *Diabetes Plan*.¹³ An objective of the 2013 *Texas Plan to Reduce Cardiovascular Disease and Stroke* is to reduce the death rate from CVD and stroke among those with diabetes.

Tobacco Use and Exposure to Second Hand Smoke

Tobacco remains the single most preventable cause of death and disease in the U.S. today. Tobacco use is a major risk factor for heart disease and stroke.¹⁴ From 2000-2004, 32.7 percent of smoking-attributable death was caused by CVD.³³ The CDC estimates that tobacco use costs the country \$96 billion in direct medical care expenses and \$97 billion in lost productivity each year.¹⁴

In Texas, adult smoking rates decreased significantly from 2007 (19.3%) to 2010 (15.8%).³ The Texas high school smoking rate in 2011 (high school students who reported smoking cigarettes on one or more days during the past 30 days) was 17.4% compared to the Healthy People 2010 goal of 16%.¹⁵ So while Texas has seen improvements, there is still progress to be made.

Exposure to secondhand smoke is also causally associated with CVD. According to the CDC, involuntary exposure to secondhand smoke in home or work environments increases the risk of heart attack by 25-35 percent. Each year in the U.S., 46,000 non-smokers die from CVD related to secondhand smoke.¹⁶ Many Texas communities are working to adopt or have already passed smoke-free ordinances that reduce exposure to secondhand smoke in public places, including bars and restaurants. However, 57 percent of the municipal Texas population is still not covered by smoke-free policies across five focal settings, including municipal worksites, private worksites, restaurants, bars in restaurants, and bars not in restaurants.⁴⁵

Tobacco-related health disparities are reflected in unequal prevention and treatment of tobacco use, disproportionate incidence, disparate morbidity and mortality, and inadequate access to resources. Members of certain racial/ethnic minority groups, people with low socioeconomic status, and people with lower levels of education are at higher risk for tobacco use and exposure to secondhand smoke and experience more tobacco related illness and death.³⁴ In Texas, young adults between 18 and 29 (23.6%) had significantly higher smoking prevalence than older adults (30-44 years, 14.2%; 45-64 years, 17.6%; 65 and older, 8.5%). Males (18.3%) had higher smoking prevalence than females (13.4%), and Whites (17.0%) and African Americans (18.3%) had higher smoking prevalence rates than Hispanics (13.7%), although this was not statistically significant.³

Investments in state level, evidence-based prevention programs have produced significant reductions in cigarette consumption, demonstrating the need for fully funded statewide tobacco prevention programs at CDC-recommended levels. Tobacco control in Texas is underfunded with 0.3 percent of the \$1.9 billion collected yearly in Texas from tobacco settlement funds and tobacco taxes invested in comprehensive community level programs. This spending level places Texas 39th among the states for tobacco prevention program funding.¹⁷

The Texas Cancer Council, which became the Cancer Prevention and Research Institute of Texas (CPRIT) in 2007, is charged with implementing the *Texas Cancer Plan* and published the *Texas Tobacco Control Plan 2008, A Statewide Action Plan for Tobacco Prevention and Control in Texas*.³⁴ Partners from across the state and many community level stakeholders are actively working to reduce tobacco use in Texas. Reducing tobacco use among youth and adults and reducing exposure to secondhand smoke are objectives of the 2013 *Plan*.

Overweight and Obesity

The prevalence of overweight and obesity in Texas and the U.S. has been on the rise for the past few decades. In fact, obesity rates among children have tripled and rates among adults have doubled.¹⁸ In 2010,

two out of three (66.6%) Texas adults were overweight or obese. Males (73.5%) had a significantly higher overweight and obesity rate than females (59.2%). Among racial/ethnic groups, Hispanics (74.3%) and African Americans (73.7%) had significantly higher rates for obesity and overweight compared to Whites (62.9%). Persons ages 45-64 (72.6%) are significantly more overweight or obese than those ages 18-29 (49.8%) or older than 65 (65.4%).³

A survey of high school students conducted in 2011 found that 16 percent of students were overweight (at or above the 85th percentile but less than the 95th percentile for body mass index¹⁸), and 19 percent of males and 11.9 percent of females were obese (at or above the 95th percentile for body mass index¹⁸). Hispanic students, followed by African American students, had higher rates of overweight than Whites at 18.4 percent, 17.8 percent, and 12.4 percent respectively.¹⁵

Heart disease, stroke, high blood pressure, high cholesterol, diabetes, cancer, respiratory problems, and arthritis are among the health consequences of overweight and obesity. Risk factors for heart disease such as high cholesterol and high blood pressure are more prevalent in children and adolescents who are overweight or obese.¹⁸

In addition to contributing to poor health outcomes, obesity harms the economy. According to the CDC, total direct and indirect medical expenses related to obesity were a staggering \$147 billion in 2008.¹⁹ The Texas Comptroller estimates that obesity cost Texas businesses \$9.5 billion in 2009, and if obesity rates among the Texas workforce continue to increase, obesity could cost Texas businesses \$32.5 billion in 2030.³⁹

The Surgeon General's *Vision for a Healthy and Fit Nation* identifies, as a national priority for immediate action, the need for the nation to take an informed, sensitive approach to communicate with and educate the American people about health issues related to overweight and obesity. While personal behaviors and choices related to diet and physical activity do affect health outcomes including obesity, focus on changing the social and physical environments allows individuals and communities to have opportunities to make healthy choices that lead to positive health outcomes.¹⁸

Research has shown that childhood obesity, even among underserved populations, can be reduced by finding and using opportunities for comprehensive obesity prevention and control efforts that involve community programming, school health programs, nutrition and physical activity programs for adults, and advertising campaigns.⁴⁴ The Nutrition, Physical Activity, and Obesity Prevention Program at DSHS has worked with partners from across the state to produce *Updates for the Strategic Plan for the Prevention of Obesity in Texas 2008 (Update)*. The *Update* is intended to provide direction and focus as Texans move forward with implementation of the *Strategic Plan for the Prevention of Obesity in Texas: 2005-2010 (Obesity Plan)*. The *Update* identifies 19 key targets from the *Obesity Plan* and 55 indicators that will be used to track progress as partners across Texas work to address obesity as a public health issue; create opportunities to choose lifestyles that promote healthy weight; implement policies and environmental changes that support healthful eating and physical activity; and decrease obesity rates through the dissemination of evidence-based

*Overweight and obesity classifications are determined by body mass index (BMI), a ratio of body weight (kg) to height (m)². Overweight is defined, in adults, as a BMI between 25 and 29.9. Obesity in adults is defined as a BMI of 30 or higher. In children, overweight is defined as between the 85th and 95th percentile for BMI for age and sex specific percentile, and obesity is defined as 95th percentile and higher.*¹⁸

practices.²⁰ Reducing the proportion of adults and youth who are overweight or obese is an objective of the *Texas Plan to Reduce Cardiovascular Disease and Stroke*.

Unhealthy Eating

Nutrition plays an important role in an individual's overall health and quality of life. A diet high in calories, saturated or trans fats, cholesterol, sodium, and/or sugar contributes to poor health. Whereas a diet high in fruits and vegetables leads to better health outcomes.²¹

For reducing risk of CVD and stroke, the American Heart Association encourages individuals to know their daily caloric intake to ensure calories eaten do not exceed calories burned through daily physical activity and consuming nutrient rich foods that are high in vitamins, minerals, fiber, and other nutrients but low in calories.²¹

Americans are encouraged to eat a variety of foods, including:

- Vegetables and fruits (at least 4.5 cups a day)
- Unrefined whole grains
- Low fat dairy products, lean meats, poultry, and fish, including oily fish high in omega-3 fatty acids
- Limited amounts of salt, sugar, saturated fats, trans fats, and cholesterol²¹

The 2013 *Plan* focuses on three of the Healthy People 2020 objectives for improving nutrition related to CVD and stroke: fruit and vegetable consumption and sodium intake.

In 2009, Texas (76.2%) had a similar prevalence of eating fruits and vegetables fewer than five times per day compared to the nation (76.3%). Males (80.8%) had a significantly higher prevalence of low fruit and vegetable consumption than females (71.8%), and there was no statistically significant difference among racial/ethnic groups.³ Poor eating habits are often established during childhood, so resources should be directed toward initiatives that affect children's nutrition. Only 18.5 percent of Texas high school students in 2011 reported eating five or more servings of fruits and vegetables per day. African American (21.0%) and Hispanic (20.2%) students were more likely to report they had eaten five or more servings of fruits and vegetables per day for the past seven days than White students (14.8%), but the difference was not statistically significant. Male high school students (21.2%) were significantly more likely to report they had eaten five or more servings of fruits and vegetables per day for the past seven days than female high school students (15.6%).¹⁵

Dietary sodium reduction is a cornerstone in managing high blood pressure. Excessive sodium intake is a proven risk factor for high blood pressure, which can lead to cardiovascular events.²³ The 2010 Dietary Guidelines for Americans recommends reducing sodium intake to no more than 2,300 mg per day for the

A NOTE ON BREASTFEEDING

Breastfeeding benefits extend into adulthood, and have shown positive outcomes for mothers and infants, in addition to children and adults who were breastfed as infants. Studies have shown that women who breastfed for 7-12 months were less likely to have hypertension, diabetes, and hyperlipidemia later in life and were less likely to develop cardiovascular disease later in life.²² Breastfeeding also has been associated with higher levels of HDL-c and lower BMI in adulthood.⁴² Studies have shown that children who were not breastfed experience higher average blood pressure and cholesterol, and adults who were not breastfed as infants have significantly higher average cholesterol levels than their breastfed counterparts.⁴³

general population and no more than 1,500 mg per day for those who are at a higher risk for cardiovascular events.²³ A popular, evidence-based approach to reducing hypertension is the Dietary Approaches to Stop Hypertension (DASH) eating plan. A 1,600 mg sodium DASH eating plan has effects similar to single drug therapy for treating high blood pressure.¹⁰ Reducing the amount of sodium in manufactured/packaged and restaurant-prepared foods has become a national initiative to reduce daily intake of sodium by Americans.²³

To meet national and state objectives for good nutrition, the CDC recommends a public health approach that includes continued surveillance and strategies that support and reinforce healthy behavior and address barriers. Interventions that increase public awareness, effectively motivate individual behavior change, and increase access to affordable healthy foods should be promoted. Related strategies include health care provider recommendations, school-based initiatives, faith-based and culturally appropriate programs, and access to community gardens and farmer's markets.²⁴ Objectives to increase the proportion of youth and adults who report eating fruits and vegetables five or more times per day and who report currently taking measures to reduce sodium intake are a focus of the 2013 *Plan*.

Lack of Physical Activity

Regular physical activity is associated with reduced risk for chronic disease and a healthier, longer life. Cardiovascular benefits of regular physical activity include lower risk for heart disease, high blood pressure, stroke, abnormal blood cholesterol and triglycerides, diabetes, and obesity.²⁵

Despite the benefits, most Texans, like most Americans, are sedentary. In 2010, the proportion of Texas adults who reported no participation in leisure time activity (26.7%) was significantly higher than the national average (24.4%). Females (29.9%) were significantly less likely to participate in leisure time activity compared to males (23.4%). African Americans (32.6%) and Hispanics (32.3%) had a significantly higher prevalence of no leisure time activity than Whites (23.0%). Persons over the age of 65 (32.9%) were significantly less likely to participate in leisure time activity than other age groups.³

Lack of physical activity has contributed to a sharp increase in childhood obesity over the past 20 years.¹⁸ In 2011, too few Texas high school students reported being physically active for at least 60 minutes per day on five or more days during the past week (44.5%). Males were significantly more likely to be active (53.6%) than females (35.1%), while Hispanic students were less likely to be active (39.6%) compared to Whites (50.4%) and African Americans (47.8%).¹⁵

The U.S. Department of Health and Human Services recommends that adults do 150 minutes of moderately intense exercise per week or 75 minutes of vigorous exercise. Youth recommendations are 60 minutes daily of moderately intense to vigorous activity. Adults should also engage in muscle-strengthening exercise two or more days per week for additional health benefits.²⁵ Only 48.1 percent of Texans 18 and older participated in moderate physical activity in 2009.³ Children and adolescents should have at least 60 minutes of moderate physical activity a day, with at least three days a week of vigorous physical activity. Children and adolescents should also do physical activity that involves muscle-strengthening and bone-strengthening at least three days of the week.²⁵

Interventions that have shown success in promoting physical fitness include: limiting screen time for youth, establishing policies for physical activity in child care and school settings; creating physical activity curricula based on national standards; establishing worksite wellness programs that promote physical activity by offering incentives, designated exercise areas, safe walking paths and stairwell programs; supporting health care provider reminders related to physical activity screening and education; building infrastructure for safe walking

and biking in the community; and improving access to public transportation.¹⁸ The 2013 *Plan* includes objectives to increase the proportion of adults and youth who engage in regular physical activity.

Systems of Care

The early detection and effective treatment of already-established CVD is crucial. Monitoring, tracking, and making improvements, where needed, within the systems of care in Texas are priorities in the 2013 *Plan*. Information and data regarding the general public's knowledge of early warning signs and symptoms of heart attack and stroke events, the development and implementation of screening and treatment guidelines and protocols, and the quality and equity of long term care are needed in order for Texas policy makers, agency and organizational leaders, and community level practitioners to better understand the issues and challenges Texas faces in reducing mortality and morbidity from heart attack and stroke.

The benefits of rapid identification and treatment of heart attack and stroke are clear. Early treatment of heart attack reduces heart muscle damage and early treatment of stroke can minimize functional disability. As therapies become increasingly more effective, rapid implementation of therapies has become critical to improving patient outcomes.³⁷ Strategies for improving patient outcomes include developing and implementing clinical practice guidelines and protocols that reflect accepted standards of care and providing education and training for emergency department personnel.

The systems of care targeting cardiac and stroke events can be classified as the emergency health care system or pre-hospital care; the stroke system of care; the heart system of care; and the public health system. While each of these systems has a unique role, coordination among the systems of care is of utmost importance to ensure efficient and effective, high-quality care.

Emergency Health Care System (Pre-hospital care)

For both a stroke event and a cardiac event, rapid diagnosis and treatment can mean the difference between recovery, disability, or death. Healthy People 2020 has set developmental objectives for increasing the proportion of persons who have access to rapidly responding pre-hospital emergency services and the proportion covered by basic life support or advanced life support.³⁶

In Texas, the average Emergency Medical Services (EMS) response time for a suspected cardiac event in 2008 was approximately 8.5 minutes from the time the call was received to the time EMS arrived on the scene, and the average delivery time was nearly 39.7 minutes from the time the call was received to the time EMS arrived at the destination, generally a hospital. For a suspected stroke, the average EMS response time was approximately 11.0 minutes and the average delivery time was 42.3 minutes.³⁷

Response times varied across Public Health Service Regions (HSR). Some Regions demonstrated improvement in response time between 2007 and 2008 while others did not. The average EMS response times for cardiac arrest in HSR 11 increased from 7.6 minutes in 2006 to 13.4 minutes in 2008, and the average EMS response time for stroke increased from 8.8 minutes in 2006 to 27.7 minutes in 2008.³⁷ (Note: These numbers are likely underestimations as the Texas EMS/Trauma Registry did not receive medical-related calls from all participating EMS providers in Texas.³⁷)

A 2010 survey conducted of EMS in 200 cities in America identifies the need for improvements in the emergency health care system from the time a 911 call is placed until the patient is delivered to the hospital.

Other identified issues within the emergency system of care include service cutbacks related to decreased tax funding and an increasing number of uninsured patients; use of emergency medical dispatch protocols; use of electronic patient care records; use of transport protocols for designated cardiac or stroke centers; lack of protocols for use of thrombolytics; and community CPR and public access defibrillator programs.²⁶ The emergency health care system, in coordination with the stroke, cardiac, and public health systems of care, will need to address these current issues moving forward to provide high-quality, efficient care.

The Stroke System of Care

Many areas of Texas are currently underserved with regard to stroke facilities that are able to effectively diagnose, treat, and manage stroke patients. DSHS designates Texas stroke facilities as either *comprehensive*, *primary* or *support* facilities, based on services provided. Services may include acute stroke care, supportive care and transport, and comprehensive stroke care including the full range of stroke treatments, rehabilitation, and long term care.

The Cardiovascular Disease and Stroke Program and Texas Cardiovascular Disease and Stroke Partnership, in consultation with the DSHS Office of EMS and in collaboration with the American Heart Association (AHA) and the American Stroke Association (ASA), developed the Stroke Public Education Toolkit -2010. This initiative aimed to impact timely care to patients, reduce the burden of stroke, and improve survival outcomes through public education campaigns (see Appendix I). Continuing to improve and expand the stroke system of care in Texas is a focus of the 2013 *Plan*.

The Heart System of Care

The heart system of care ranges from acute care to rehabilitation services. Many areas of Texas also are underserved with regard to such capacity for cardiac care, even though early treatment and continued management is crucial. Patients who receive artery opening therapy within the first or second hour after the onset of heart attack symptoms experience significant reductions in disability and death.³⁷ An AHA initiative for ST elevation myocardial infarctions

STEMI vs. NSTEMI

ST-elevation myocardial infarction (STEMI) is a heart attack that happens as a result of total coronary artery blockage. Because of the occlusive nature, there is a high risk of death and disability with STEMI. A non ST-elevation myocardial infarction (NSTEMI) may occur when an artery is partially blocked and therefore severely reducing blood flow through that artery. The fastest way to differentiate a STEMI and NSTEMI event is through an electrocardiogram (ECG).²⁸

(STEMI), called Mission: Lifeline, focuses on increasing the number of patients with timely access to quality care. According to the AHA, about 250,000 people a year experience STEMI. About 30 percent of those people do not receive percutaneous coronary intervention (PCI) or thrombolytic therapy, and of those who do receive PCI, only 40 percent receive PCI within the timeframe recommended by AHA. Less than 50 percent of patients receive thrombolytic therapy within the recommended timeframe, and 70 percent of patients who are not eligible for thrombolytic therapy do not receive PCI, which is the only other option to restore blood flow to occluded arteries.²⁸

In addition to STEMI events, guidelines for treating non ST-elevation myocardial infarction (NSTEMI), are not routinely followed in all patients, and therefore NSTEMI outcomes are not as positive as they should be based on current scientific knowledge.³⁸ Therefore, appropriate utilization of treatment for cardiovascular events and improving and expanding the heart system of care in Texas is a key objective of the 2013 *Plan*.

Public Health System

Throughout its history, DSHS has funded and supported numerous statewide and community level initiatives to reduce CVD and stroke. DSHS continues to address CVD and stroke as a public health issue through the CDC-funded Cardiovascular Disease and Stroke Program. In addition, the program supports the Texas Council on Cardiovascular Disease and Stroke and the Texas Cardiovascular Disease and Stroke Partnership.

A systems approach that focuses on building capacity for state and local efforts to implement population-based interventions has been and will continue to be a priority for the Cardiovascular Disease and Stroke Program. The Cardiovascular Disease and Stroke Program and statewide Partnership are pursuing population-based, capacity-building strategies, including: monitoring CVD and stroke; supporting collaboration among partners; coordinating available services and resources; expanding reach and improving quality of care; connecting partners to evidence-based interventions; and working to reduce health care disparities. The 2013 *Plan* includes objectives related to those efforts and aims to increase the capacity for state and local entities to implement the *Plan*.

Framework for Action

The Texas Framework for Heart Disease and Stroke (Framework) has undergone a dramatic change since 2008. The new Framework is modeled after the Coordinated Chronic Disease State Plan Framework and outlines a comprehensive strategy for the *Texas Plan to Reduce Cardiovascular Disease and Stroke* through four domains or focus areas (see Figure 11). Domains include *Strategies that Reinforce/Support Healthy Behavior*, *Health Systems Interventions*, *Community-Clinical Linkages Enhancements*, and *Surveillance and Epidemiology*. Each focus area contains a goal and accompanying objectives and strategies that tend to be cross-cutting with many similar aims. The *Strategies that Support/Reinforce Healthy Behavior* focus area contains policy or environmental approaches to achieving health behavior changes. The *Clinical-Community Linkages Enhancements* focus area contains strategies that promote partnerships between clinical groups and community supports to improve patient health. The *Health Systems Interventions* focus area contains strategies that aim to improve the way health care systems in the state detect, manage and control heart disease and stroke through changes in capacity and infrastructure. Lastly, the *Surveillance and Epidemiology* domain comprises objectives and strategies that aim to provide enhanced data and information for purposes of monitoring trends and progress, raising awareness, increasing knowledge, and ultimately decision-making. In an effort to move towards a more coordinated approach to CVD and stroke, as well as to chronic disease, the 2013 objectives and strategies tend to be cross-cutting through the four focus areas.

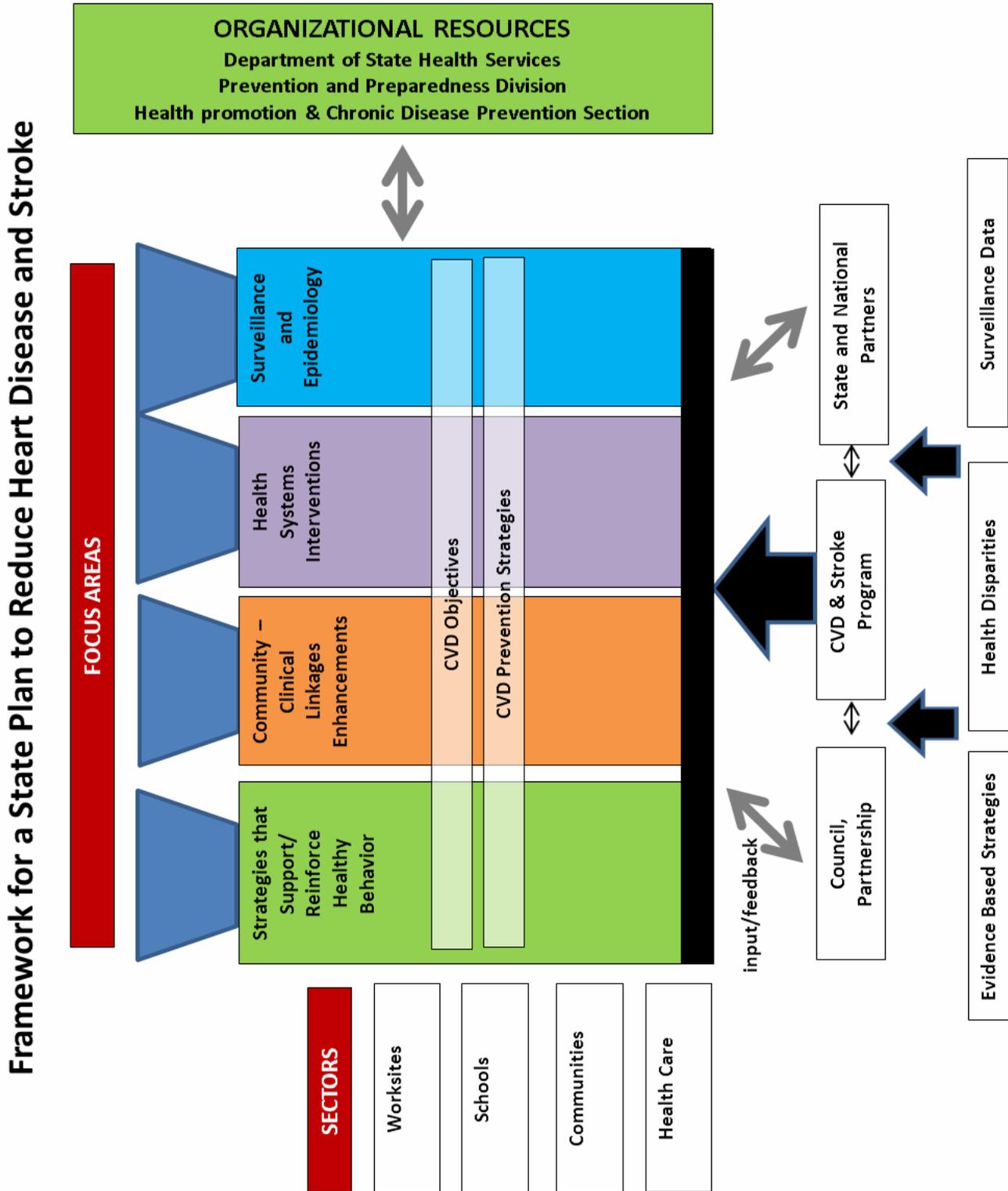
The Framework also demonstrates which sectors, partners, and organizational resources frame the *Plan*. Identified sectors include worksites, schools, communities, and health care settings. Inputs include the Texas Council on Cardiovascular Disease and Stroke, the Texas Cardiovascular Disease and Stroke Partnership, the Cardiovascular Disease and Stroke Program, and national and state partners. Organizational resources include the Texas Department of State Health Services, the Health Promotion & Chronic Disease Prevention Section, and the Division for Preparedness and Disease Control.

As the framework suggests, when four broad approaches (*Strategies that Support/Reinforce Healthy Behavior, Health Systems Interventions, Clinical-Community Linkages Enhancements and Epidemiology and Surveillance*) are fully and effectively implemented, a heart healthy, stroke-free Texas can be realized.

A Model for Action

In addition to a framework, a logic model is a tool for graphically representing the relationships between a program's activities and its intended effects, the assumptions that underlie expectations, and the context in which the program will operate.²⁹ Figure 12 depicts a logic model that represents the critical entities that are needed for successful *Plan* implementation; major activities that will take place, especially those involving the coordinated efforts of the Partnership; concrete outputs that will be generated along the way; and expected short, intermediate, and long term outcomes.

Figure 11: Framework for a State Plan to Reduce Heart Disease and Stroke



Texas Plan to Reduce Cardiovascular Disease and Stroke 2013 – 2017 Logic Model

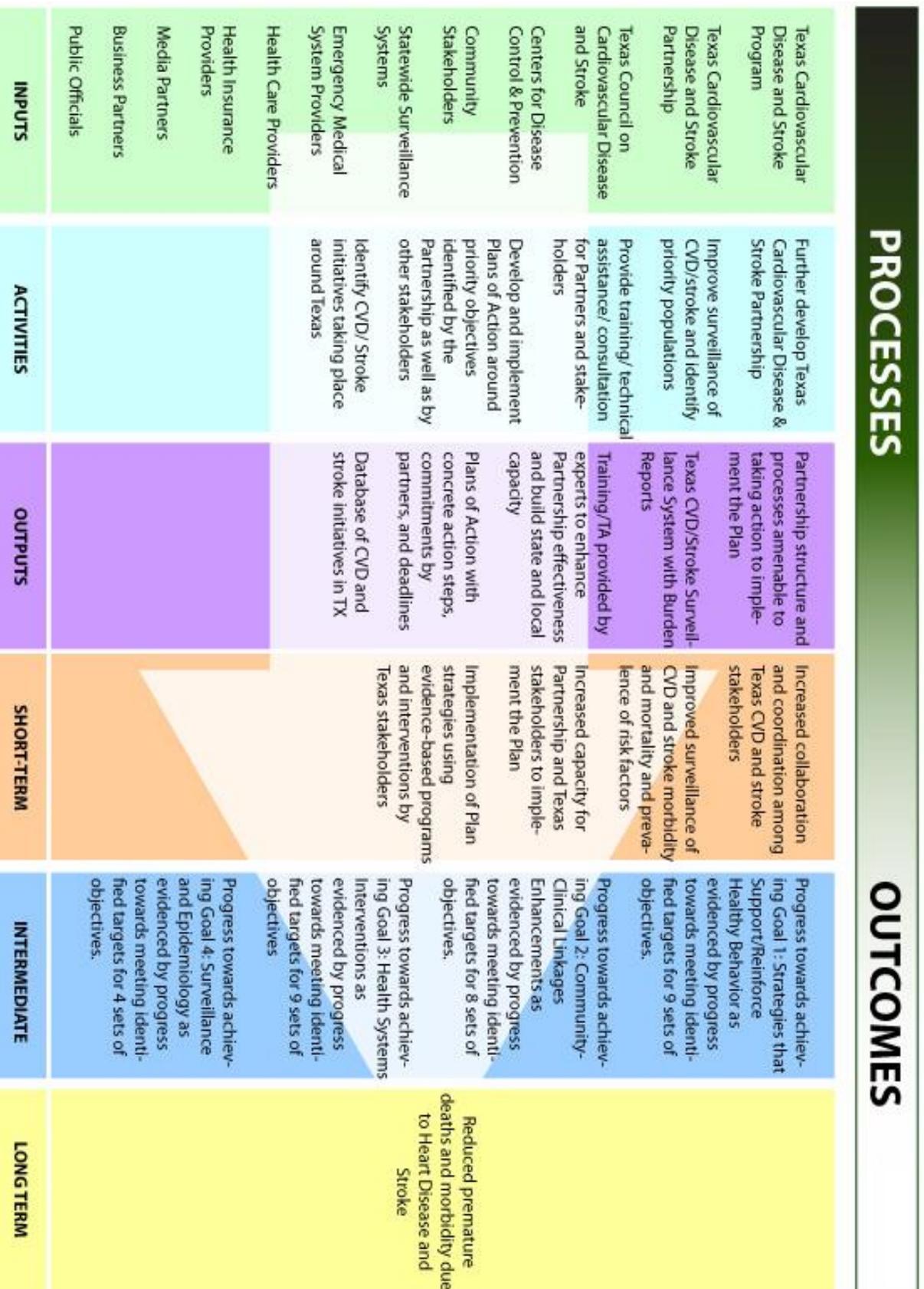


Figure 12: Logic Model

Texas Goals, Objectives and Strategies 2013 – 2017

The *Texas Plan to Reduce Cardiovascular Disease and Stroke (Plan)* identifies a set of goals and objectives, and proposes evidence-based, best practice, or promising strategies to approach these objectives. Some strategies are cross-cutting, and so address more than one objective. When objectives apply to multiple focus areas, they are listed within a primary focus area and the additional applicable focus areas are denoted with an asterisk. Many of the objectives are taken directly from the national Healthy People (HP) 2010 and 2020 objectives for improving the health of the nation. Progress in meeting these objectives can be measured using established health indicators and existing data collection sources.

In some cases, the objectives are related to improving the systems of care in Texas and building capacity for local and statewide cardiovascular and brain health efforts. These objectives are not measurable using established health indicators and therefore are labeled as “developmental.” Stakeholders taking action in these areas should identify indicators for monitoring and reporting success early on.

For many strategies, there may be specific evidence-based or best practice programs or interventions already in existence. See Appendix I for a list of existing, evidence-based or promising programs/resources. Stakeholders should seek and use existing, evidence-based programs when they exist and, when they do not, should develop new interventions using theory based approaches and good evaluation techniques.

Stakeholders in Texas working on cardiovascular and brain health should be able to identify where their efforts fit within this *Plan*. Individuals and organizations will determine how their mission plays a part in implementing the *Plan* and will identify what actions they are taking or will take in the future to implement identified strategies. Partners’ action planning around strategy implementation will serve to further efforts toward achieving short-term objectives and long-term goals. Working together, stakeholders in Texas can achieve progress in reaching these goals and, ultimately, in reducing premature death and improving quality of life for Texans with heart disease and stroke.

Goal: *A statement of a long term expected outcome.*

Objective: *A short-term, measurable change that, when accomplished, will help in reaching the goal.*

Strategy: *A relatively broad approach to achieving an objective.*

SMART Objectives should be Specific, Measurable, Attainable, Realistic and Time-bound.

Key to Symbols

Objectives also have SS but not in key

SE: The strategy is supported with **Strong Evidence** and recommended by the Guide to Community Preventive Services or the U.S. Preventive Services Task Force

SE-Other – Supported with **Strong Evidence** by the indicated agency

EUR: The **Evidence** to support the effectiveness of the strategy is currently **Under Review** (as of June 2008)

R: The strategy is **Recommended** by the Guide to Community Preventive Services, the U.S. Preventive Services Task Force, or the CDC

Goal 1: Strategies that Support/Reinforce Healthy Behavior

To establish and promote environments that support the prevention of heart disease and stroke through healthy eating, daily physical activity, and tobacco-free lifestyles for all Texans, with an emphasis on access to resources and priority populations.

Objective 1.1: By June 30, 2017 increase the proportion of adults who engage regularly in moderate physical activity for at least 150 minutes per week by 5% (HP 2020)

Objective 1.1.1: By June 30, 2017, reduce the proportion of adults who engage in no leisure-time physical activity by 5% (HP 2020)

Implement community-wide campaigns (SE)

Promote worksite physical activity programs (SE)

Create/enhance access to places for physical activity such as parks, trails, bike lanes, and sidewalks combined with information outreach (SE)

Objective 1.2: By June 30, 2017, increase the proportion of youth grades 9-12 who have been physically active for a total of 60 minutes per day on five or more days per week by 5% (HP 2020)

Encourage school-based physical education, define physical education requirements for schools, and educate about existing policy concerning physical education requirements (SE)

Improve/implement community wide campaigns (SE)

Develop collaborations among community partners working to increase youth physical activity levels (non-family social support) (SE)

Objective 1.3: By June 30, 2017, increase the proportion of adults 18 and older who report eating fruits and vegetables five or more times per day by 5% (HP 2010)

Objective 1.3.1: By June 30, 2017, increase the proportion of youth grades 9-12 who report eating fruits and vegetables five or more times per day by 5% (HP 2010)

Enhance access to healthy foods (R - National Prevention Council) and reduce access to unhealthy foods at worksites and in community and school-based settings (SS)

Provide information about produce that includes price and easy preparation ideas (SS)

Encourage eligible youth to participate in the National School Lunch Program (SE - USDA)

Implement recognition programs for schools meeting standards (R - U.S. Department of Agriculture)

Objective 1.4: By June 30, 2017, reduce the proportion of adults who report a BMI (height and weight self-report) equal to or greater than 25 Kg/m² by 5% (HP 2020)

Objective 1.4.1: By June 30, 2017, reduce the proportion of youth grades 9-12 who report a BMI (height and weight self-report) equal to or greater than the sex and age specific 95th percentile from CDC growth charts by 5% (HP 2020)

Implement multi-component interventions aimed at diet, physical activity, and cognitive change at worksites and in other settings (R)

Research evidence-based programs for maintaining healthy BMI in college-age adults (SS)

Implement community interventions that increase access to affordable healthy foods and places to be physically active (SE)

Educate about physical education curricula in schools (SE)

Expand coordinated school health requirements through grade 12 (R)

Educate about the benefits of existing and enhanced physical activity, nutrition, and coordinated school health strategies for all grades (SS)

Objective 1.5: By June 30, 2017, reduce the proportion of youth grades 9-12 who report ever using any type of tobacco on one or more days by 10% (HP 2020)

Objective 1.5.1: By June 30, 2017, reduce the proportion of youth grades 9-12, who report using cigarettes in the past 30 days by 10% (HP 2020)

Objective 1.5.2: By June 30, 2017, reduce the proportion of youth grades 9-12 who report using smokeless tobacco products in the past 30 days by 10% (HP 2020)

Objective 1.5.3: By June 30, 2017, reduce the proportion of youth grades 9-12 who report using cigars in the past 30 days by 5% (HP 2020)

Educate about the use of evidence-based tobacco programs that include educational, clinical, and social strategies with the goal of tobacco and smoke-free environments (SE)

Use peer-involved campaigns (SS)

Implement multi-component campaigns that include use of mass media, school and community prevention campaigns, and tobacco and smoke-free environments (SE)

Educate about ordinances that prohibit sale of tobacco to minors (SE)

Provide health care provider counseling (SE)

Objective 1.6: By June 30, 2017, reduce the proportion of adults who smoke cigarettes by 10% (HP 2020) *Also Health Systems Interventions

Objective 1.6.1: By June 30, 2017, reduce the proportion of adults who use smokeless tobacco products by 5% (HP 2020)

Objective 1.6.2: By June 30, 2017, reduce the proportion of adults who smoke cigars (Developmental) (HP 2020)

Promote health care provider screening and counseling (SE)

Promote counseling among pediatricians to promote cessation and prevention efforts in pregnant women and mothers (SE)

Implement multi-component campaigns that include use of mass media, education, school and community prevention campaigns, and tobacco cessation (SE)

Educate about smoke-free environments in public places, including worksites (SE)

Support interventions that increase the unit price for tobacco products (SE)

Objective 1.7: By June 30, 2017, reduce exposure to secondhand smoke by 5% (HP 2020) *Also Health Systems Interventions

Educate about community policies for smoke-free public spaces, including worksites (SE)

Educate about existing tobacco and smoke-free environments (SE)

Develop grass roots coalitions to work on smoke-free environments (R)

Promote counseling among pediatricians to promote cessation and prevention efforts in pregnant women and mothers (SE)

Encourage state hospital licensure requirements to require smoke-free campuses (SS)

Promote smoke-free school requirements (R)

Objective 1.8: By June 30, 2017, increase proportion of Texans who report currently taking measures to reduce sodium intake (Developmental)

Educate about procurement practices that limit sodium in government purchased food, worksites, and schools (SE - Institute of Medicine)

Promote availability of lower sodium food options (fresh produce) (R)

Promote expansion of consumer information and labeling initiatives for sodium (e.g., point of purchase warning labels) (SE - Institute of Medicine)

Collaborate with business coalitions to promote healthy workplace programs and environments that help lower sodium intake (R)

Collaborate with food manufacturers, restaurant associations, and schools to promote sodium reduction (SE - Institute of Medicine)

Promote the Dietary Approaches to Stop Hypertension eating plan (DASH) (SE - U.S. Department of Health and Human Services)

Objective 1.9: By June 30, 2017, reduce the proportion of adults 18 and older with high blood pressure by 5% (HP 2020)

Increase the number of worksites that have physical activity and nutrition programs or best practice wellness programs, strategies, and environmental supports that reduce risk factors related to high blood pressure (SE)

Implement community level programs promoting healthy eating, physical activity, smoking cessation, and healthy weight (SS)

Work to decrease sodium content in restaurant and manufactured foods (SS)

Goal 2: Community - Clinical Linkages Enhancements

To promote partnerships between clinical and community groups in Texas to provide enhanced and coordinated patient care.

Objective 2.1: By June 30, 2017, increase the proportion of persons at risk for or with cardiovascular disease who are aware of resources regarding disease management (Developmental)

Continue to enhance web-based resources that promote evidence-based material for patients (R), including the Texas Cardiovascular Disease and Stroke Partnership web-site

Partner with health promotion experts to develop culturally appropriate communication (SS)

Work through community networks to share information and resources (R)

Objective 2.2: By June 30, 2017, collaborate with the Governor's EMS and Trauma Advisory Council (GETAC) to increase resources available to advance prevention efforts and improve the Texas heart and stroke system of care (Developmental)

Increase collaboration and create synergy, and leverage existing resources among Texas stakeholders (R)

Use existing data to educate stakeholders about issues (R)

Continue to advance the power and commitment of the Texas Cardiovascular Disease and Stroke Partnership to impact change in Texas (R)

Objective 2.3: By June 30, 2017, increase access to cardiovascular disease and stroke prevention, early detection, and treatment services for underserved populations (Developmental)

Objective 2.3.1: By June 30, 2017, increase access to cardiovascular disease and stroke prevention, early detection, and treatment services for rural populations (Developmental)

Objective 2.3.2: By June 30, 2017, increase access to cardiovascular disease and stroke prevention, early detection, and treatment services for populations in poverty (Developmental)

Objective 2.3.3: By June 30, 2017, increase access to cardiovascular disease and stroke prevention, early detection, and treatment services for the uninsured population (Developmental)

Expand the cardiovascular health care system to include non-traditional partners that can assist in improving access to care (R)

Promote the use of community health workers (R)

Promote appropriate cultural competency trainings for the health care work force (R - AHRQ)

Promote the creation of new community health centers and expanded services at existing community health care centers (R - U.S. Department of Health and Human Services)

Objective 2.4: By June 30, 2017, increase the proportion of adults who are aware of the early warning signs and symptoms of heart attack and stroke and the importance of calling 911 if a heart attack or stroke is suspected by 10% (HP 2020)

Promote the use of evidence-based public education programs tailored to appropriate audiences (R)

Partner with Emergency Medical Services, 911 authorities, state agencies, and non-profits to serve as conduits for information dissemination (R)

Promote media campaigns to increase knowledge of early warning signs of heart attack and stroke and how to respond (SS)

Objective 2.5: By June 30, 2017, increase the proportion of out-of-hospital cardiac arrests in which appropriate bystander and emergency medical services were administered (Developmental) (HP 2020)

Provide community based group training in CPR and the use of AEDs (SS)

Support the establishment of evidence-based, CPR/AED programs in schools (R - American Heart Association)

Promote AED placement policies for businesses, restaurants, and other community settings (R - American Heart Association)

Objective 2.6: By June 30, 2017, increase the proportion of adults who are taking at least two preventive actions (for example: changing eating habits, exercising, reducing sodium intake, taking

medications) who are at risk for or who have cardiovascular disease, including stroke by 5% *Also Health Systems Interventions

Implement community outreach and worksite programs promoting healthy eating (for example the DASH eating plan), physical activity, smoking cessation, and healthy weight (SS)

Identify, disseminate, and promote utilization of evidence-based guidelines for hypertension diagnosis, treatment, and management (R)

Promote the availability of health plans that cover/include appropriate screenings and incentives to identify, reduce, and treat high blood pressure (SS)

Encourage health care practices to use team-based care that includes a multidisciplinary team of health care professionals (SS)

Promote health care system level solutions that use practitioner and patient reminders and medical records flags (R)

Work with third party payers to reimburse for high blood pressure management (SS)

Increase access to primary health care and affordable medications for underserved populations (R)

Assess and address barriers to compliance with physician recommendations and prescribed medications (R)

Objective 2.7: By June 30, 2017, increase the number of Heart and Stroke Healthy communities in Texas from 31 to 34 *Also Health Systems Interventions and Strategies that Support/Reinforce Healthy Behavior

Promote the implementation and monitoring, by Texas cities, of Heart and Stroke Healthy City (HSHC) Recognition Program indicators (R)

Increase connections between regional or local advisory groups or partnerships and regional resources to promote sharing of resources and improving initiatives related to cardiovascular disease and stroke prevention (SS)

Expand collaboration and connectivity among health related organizations (SS)

Objective 2.8: By June 30, 2017, increase communication and collaboration between system partners, including the Department of State Health Services, and Texas communities. (Developmental) *Also Strategies that Support/Reinforce Healthy Behavior

Continue to advance the commitment of the Texas Cardiovascular Disease and Stroke Partnership to impact change in Texas (SS)

Explore the use of web casts to share progress and emerging information (SS)

Support the Texas Cardiovascular Disease and Stroke Partnership to spearhead stakeholder education about heart disease and stroke and education about policies and plans that support cardiovascular health and wellness (SS)

Goal 3: Health Systems Interventions

To promote capacity and infrastructure changes within the health delivery system to effectively prevent, treat, and manage heart disease and stroke for all Texans.

Objective 3.1: By June 30, 2017, increase the proportion of adults with high blood pressure whose blood pressure is under control (< 140/90) by 5% (HP 2020)

Promote implementation of screening guidelines by health care professionals for the early detection and treatment of high blood pressure (SE)

Promote the availability of health plans that cover/include appropriate screenings and incentives to identify, reduce, and treat high blood pressure (SS)

Encourage health care practices to use team-based care that includes a multidisciplinary team of health care professionals (SS)

Promote health care system level solutions that use practitioner and patient reminders and medical records flags (R)

Work with third party payers to reimburse for high blood pressure self-management training (SS)

Increase access to primary health care and affordable medications for underserved populations (R)

Promote Chronic Disease Self-Management Training for health care providers (R)

Promote the use of community health workers in treating patients with high blood pressure (R)

Promote team-based care for improving blood pressure control (SE)

Objective 3.2: By June 30, 2017, reduce the death rate from cardiovascular disease and stroke in persons with diabetes by 10% (HP 2020) *Also Community Clinical Linkages Enhancements

Promote partnerships with the Diabetes and Coordinated Chronic Disease programs (R)

Promote risk reduction for cardiovascular disease and stroke in persons with diabetes (R)

Promote the use of clinical practice guidelines and an integrated approach for managing persons with diabetes to reduce risk for cardiovascular disease and stroke (R)

Improve access to care for underserved populations (R)

Encourage third party payers to cover chronic disease self-management (SS)

Promote Chronic Disease Self-Management Training for health care providers (R)

Promote the use of community health workers in treating patients with high blood pressure (R)

Promote team-based care for improving blood pressure control (SE)

Objective 3.3: By June 30, 2017, increase the proportion of adults who have high blood pressure who take aspirin, as advised by a health care professional, to reduce the chance of a heart attack and/or stroke (Developmental) (HP 2020)

Promote provider adherence to recognized prevention guidelines regarding the use of aspirin therapy (R)

Encourage utilization of electronic health records and flags for providers (SS)

Objective 3.4: By June 30, 2017, increase the proportion of adults who have had their blood cholesterol screened within the preceding five years by 5% (HP 2020) *Also Strategies that Support/Reinforce Healthy Behavior

Promote implementation of screening guidelines by health care professionals for the early detection and treatment of lipid disorders (R)

Include screening for total lipid panel in worksite wellness programs (R)

Encourage provision of incentives for routine physical exams that include cholesterol screening (SS)

Objective 3.5: By June 30, 2017, reduce the proportion of adults with high blood cholesterol levels by 5% (HP 2020) *Also Strategies that Support/Reinforce Healthy Behavior

Objective 3.5.1: By June 30, 2017, reduce the proportion of adults with high non-HDL blood cholesterol levels (Developmental)

Implement community outreach programs promoting healthy eating and physical activity (SE)

Promote the availability of health plans that cover/include appropriate screenings and incentives to identify, reduce and treat lipid disorders (SS)

Increase the number of worksites that have evidence-based wellness programs, policies, and environmental supports that contribute to the reduction of high cholesterol and other risk factors related to heart disease and stroke (SS)

Objective 3.6: By June 30, 2017, increase the proportion of adults 18-75 who had an LDL-c level of less than 100mg/dL during the measurement year, after discharge for an acute cardiovascular event by 15% *Also Community Clinical Linkages Enhancements

Emphasize the need to increase access to primary health care and affordable medications for underserved populations (R)

Promote implementation of screening guidelines by health care professionals (SE)

Promote the availability of health plans that cover/include appropriate screenings and incentives to identify, reduce, and treat high LDL-c (SS)

Educate health care practices about the benefits of using team-based care that includes a multidisciplinary team of health care professionals (SS)

Promote health care system level solutions including electronic health records, practitioner and patient reminders, and medical records flags (R)

Educate third party payers about the benefits of reimbursing for cholesterol management (SS)

Assess and address barriers to compliance with physician recommendations and prescribed medications (SS)

Objective 3.7: By June 30, 2017, increase utilization of appropriate therapeutic treatment interventions and application of clinical practice guidelines for treating patients with cardiovascular disease and stroke events (Developmental)

Partner with Governor's EMS and Trauma Advisory Council to expand EMS statewide treatment protocols (R - American Heart Association)

Where appropriate, provide evidence-based, interactive health care professional education regarding protocols and guidelines for the early detection, treatment, and long-term management of cardiovascular disease and stroke patients (SS)

Identify and address barriers (cost, access, etc.) to routine utilization of therapeutic interventions and clinical practice guidelines (SS)

Promote improved EMS response and delivery times (SS)

Promote implementation of clinical practice guidelines among emergency health care system personnel (SS)

Promote the monitoring and assessment of quality of care provided (R - AHRQ)

Continue support of statewide STEMI initiative (R - American Heart Association)

Seek opportunities to create incentives for health care system partners to address quality of care issues (SS)

Promote team-based care for improving blood pressure control (SE)

Objective 3.8: By June 30, 2017, increase the proportion of adult heart attack and stroke survivors who receive outpatient cardiac and stroke rehabilitation following discharge (Developmental) (HP 2020)

Promote awareness of rehabilitation benefits among providers to increase referral rates (SS)

Encourage health care practices to implement outpatient appointment systems (i.e. through discharge order sets) to schedule patients for rehab appointments prior to discharge (SS)

Create a comprehensive list of cardiac and stroke rehabilitation centers in Texas (R - American Heart Association)

Promote mandated reimbursement of outpatient cardiac rehabilitation by third party payers through insurance reform (R - American Heart Association)

Objective 3.9: By June 30, 2017, increase the number of Texas DSHS recognized stroke facilities from 92 to 100 that can provide multiple levels of stroke care to meet the full continuum of stroke care from EMS activation to outpatient rehabilitation and support.

Promote increased access to recognized stroke centers, through telemedicine and other means (R - American Heart Association)

Support efforts to establish regional stroke committees (R - American Stroke Association)

Provide assistance for hospitals working to become certified primary stroke centers (R - American Stroke Association)

Work with hospitals, especially in medically underserved areas, to move towards achieving higher levels of stroke care (R - American Stroke Association)

Continue to support efforts to adopt and implement protocols for stroke transport (R - American Stroke Association)

Continue support of statewide stroke system of care (R - American Stroke Association)

Goal 4: Surveillance and Epidemiology

To collect, analyze, and disseminate comprehensive heart disease and stroke data that are readily available to assess, monitor, and describe the burden of heart disease and stroke in Texas. *Note: Surveillance and epidemiology is embedded in all of the State Plan objectives in order to inform priority areas and targets.

Objective 4.1: By June 30, 2017, improve statewide monitoring and surveillance of emergency health care system information (Developmental)

Work collaboratively with stakeholders and partners to identify data needs, existing collection methods, and reporting formats in addition to barriers (SS)

Continue to support the assimilation of current available data, monitoring trends, evaluation of programs and policies, and recommendation of improvements (R)

Objective 4.2: By June 30, 2017, increase Texans' accessibility to data related to heart disease and stroke (Developmental)

Identify and develop new, available data sources for CVD surveillance as feasible (R)

Produce updated products (i.e. burden reports, etc.) on the most current data as is feasible (R)

Dialogue with Data Users Group and Partnership to assess satisfaction with current data use access (IE)

Monitor number of web-site hits and number of products created and/or disseminated to assess the general public's accessibility to data (IE)

Identify and create new opportunities for data sharing among partners (R)

Objective 4.3: By June 30, 2017, improve data linkages to utilize available data to enhance the assessment of the burden of disease and risk factors in Texas (Developmental)

Continue to assimilate current available data and monitor trends (R)

Work collaboratively with stakeholders and coordinated chronic disease efforts to assess data needs, improve collection methods, and refine reporting formats (SS)

Educate about policy development that encourages data coordination and collection necessary for effective surveillance (IE)

Objective 4.4: By June 30, 2017, utilize surveillance data to identify health disparities and populations at risk to guide policies and programs that will address needs (Developmental)

Continue to assimilate current available data and monitor trends (R)

Work collaboratively with stakeholders and coordinated chronic disease efforts to assess data needs, improve collection methods, and refine reporting formats (SS)

Continue to support inclusion of new and existing heart disease, stroke, and risk factor modules in the Behavioral Risk Factor Surveillance System as feasible (IE)

Promote the systematic evaluation of existing surveillance modules

Assessing Progress

Many objectives of the 2013 *Plan* are taken directly from Healthy People 2020 and are measurable using existing surveillance data. A few objectives still reflect Healthy People 2010 because existing data sources have not been updated to reflect Healthy People 2020 for those specific measures. Data sources are described in Appendix II.

Some objectives are related to improving the infrastructure and processes that support cardiovascular health and wellness in our communities, and are labeled “developmental.” Indicators for measuring these objectives’ success have not been identified or baseline data is not yet available.

Targets for 2017 were set by analyzing trends for the past five years and estimating a reasonable change that with focused efforts could be achievable. Progress is expected to be made for most objectives. However, only through the coordinated efforts of partners and the availability of adequate resources and funding that all *Plan* objectives will be met.

Texas Benchmark Indicators, Baselines, and 2017 Targets

Long-term Goal: Reduce premature death from heart disease and stroke.				
Benchmark Indicators	Baseline			2017 Target (Target Setting Method)
	Data Source	Measure	Year	
Age adjusted mortality (per 100,000) for ischemic heart disease	TX Vital Statistics	113.3	2010	102.0 (10% improvement)
Age adjusted mortality (per 100,000) for stroke	TX Vital Statistics	44.9	2010	40.4 (10% improvement)

Goal 1: To establish and promote environments that support the prevention of heart disease and stroke through healthy eating, daily physical activity, and tobacco-free lifestyles for all Texans, with an emphasis on access to resources for priority populations.

Benchmark Indicators	Baseline			2017 Target (Target Setting Method)
	Data Source	Measure	Year	
1.1: Proportion of adults who engage regularly in moderate physical activity for at least 150 minutes per week (HP 2020)	BRFSS	48.1%	2009	50.5% (5% improvement)
1.1.1: Proportion of adults who engage in no leisure-time physical activity (HP 2020)	BRFSS	26.6%	2010	25.3% (5% improvement)
1.2: Proportion of youth grades 9-12 who have been physically active for a total of 60 minutes per day on 5 or more days per week (HP 2020)	YRBSS	44.5%	2011	46.7% (5% improvement)
1.3: Proportion of adults 18 and older who report eating fruits and vegetables 5 or more times per day (HP 2010)	BRFSS	23.8%	2009	25.0% (5% improvement)
1.3.1: Proportion of youth grades 9-12 who report eating fruits and vegetables 5 or more times per day (HP 2010)	YRBSS	18.5%	2011	19.4% (5% improvement)
1.4: Proportion of adults who report a BMI (Height and weight self-report) equal to or greater than 25 kg/m ² (HP 2020)	BRFSS	66.6%	2010	63.3% (5% improvement)
1.4.1: Proportion of youth grades 9-12 who report a BMI (height and weight self-report) equal to or greater than the sex and age specific 95th percentile from CDC growth charts (HP 2020)	YRBSS	15.6%	2011	14.8% (5% improvement)
1.5: Proportion of youth grades 9-12 who report using any type of tobacco on one or more days (HP 2020)	YRBSS	Any type tobacco 22.9%	2011	20.6% (10% improvement)
1.5.1: Proportion of youth grades 9-12 who report using cigarettes in the past 30 days (HP2020)	YRBSS	Cigarettes 17.4%	2011	15.7% (10% improvement)

Goal 1: (continued) To establish and promote environments that support the prevention of heart disease and stroke through healthy eating, daily physical activity, and tobacco-free lifestyles for all Texans, with an emphasis on access to resources for priority populations.

Benchmark Indicators	Baseline			2017 Target (Target Setting Method)
	Data Source	Measure	Year	
1.5.2: Proportion of youth grades 9-12 who report using smokeless tobacco products in the past 30 days (HP 2020)	YRBSS	Dip/chew 6.2%	2011	5.6% (10% improvement)
1.5.3: Proportion of youth grades 9-12 who report using cigars in the past 30 days (HP 2020)	YRBSS	Cigars/ Cigarillos 16.0%	2011	15.2% (5% improvement)
1.6: Proportion of adults who smoke cigarettes (HP 2020)	BRFSS	Cigarettes 15.8%	2010	14.2% (10% improvement)
1.6.1: Proportion of adults who use smokeless tobacco products (HP 2020)	BRFSS	Smokeless Tobacco 3.2%	2010	3.0% (5% improvement)
1.6.2: Proportion of adults who smoke cigars or other tobacco products (excluding cigarettes, snuff or chewing tobacco) (HP 2020)	BRFSS	Not available		To be determined
1.7: No exposure to secondhand smoke (HP 2020)	BRFSS	85.4% in the home 78.2% in public places	2009	89.7% (5% improvement) 100% (smoke-free state)
1.8: Proportion of adults who report currently taking measures to reduce sodium intake	Potential Data Source: BRFSS	Not available		To be determined
1.9: Proportion of adults 18 and older with high blood pressure (HP 2020)	BRFSS	29.1%	2009	27.6% (5% improvement)

Goal 2: To promote partnerships between clinical and community groups in Texas to provide enhanced and coordinated care.

Benchmark Indicators	Baseline			2017 Target (Target Setting Method)
	Data Source	Measure	Year	
2.1: Proportion of person at risk for or with cardiovascular disease who are aware of resources regarding disease management	Potential Data Source: BRFSS	Not available		To be determined
2.2: Resources available to advance prevention efforts and improve the Texas heart and stroke systems of care	Developmental	Not available		To be determined
2.3: Access to cardiovascular disease and stroke prevention, early detection, and treatment services for underserved populations	Developmental	Not available		To be determined
2.3.1: For rural populations	Developmental	Not available		To be determined
2.3.2: For populations in poverty	Developmental	Not available		To be determined
2.3.3: For uninsured populations	Developmental	Not available		To be determined
2.4: Proportion of adults who are aware of the early warning signs and symptoms of heart attack and stroke; and the importance of calling 911 if a heart attack or stroke is suspected (HP 2020)	BRFSS	Heart attack – 11.8% Stroke – 21.1% First call 911 – 85.9%	2009	10% increase in all areas
2.5: Proportion of out-of-hospital cardiac arrests in which appropriate bystander and emergency medical services are administered	Potential Data Sources: NHIS, CDC, NCHS	Not available		To be determined

Goal 2: (continued) To promote partnerships between clinical and community groups in Texas to provide enhanced and coordinated care.

Benchmark Indicators	Baseline			2017 Target (Target Setting Method)
	Data Source	Measure	Year	
2.6: Proportion of adults with high blood pressure who are taking at least 2 actions (for example: losing weight, participating in physical activity, reducing sodium intake, taking meds as prescribed) (HP 2010)	BRFSS	84.6%	2009	88.8% (5% improvement)
2.7: Number of Heart and Stroke Healthy communities in Texas	DSHS	32	2012	37
2.8: Increase communication and collaboration between system partners, including The Texas Cardiovascular Disease and Stroke Partnership, DSHS and Texas communities	Potential Data Sources: DSHS	Not available		To be determined

Goal 3: To promote capacity and infrastructure changes within the health delivery system to effectively prevent, treat, and manage heart disease and stroke for all Texans.

Benchmark Indicators	Baseline			2017 Target (Target Setting Method)
	Data Source	Measure	Year	
3.1: Proportion of adults with high blood pressure whose blood pressure is under control (HP 2020)*	HEDIS*	51.1%	2011	53.7% (5% improvement)
3.2: Death rate (per 100,000) from cardiovascular disease in persons with diabetes (HP 2020)	VS	342.4	2010	308.2 (10% improvement)

3.3: Proportion of adults who have high blood pressure who take aspirin, as advised by a health care professional, to reduce the chance of a heart attack and/or stroke (HP2020)	Potential Data Source: BRFSS	Not available		To be determined
3.4: Proportion of adults who have had their blood cholesterol checked within the preceding 5 years (HP 2020)	BRFSS	72.0%	2009	75.6% (5% improvement)
3.5: Proportion of adults who report having high blood cholesterol (HP 2020)	BRFSS	40.9%	2009	38.9% (5% improvement)
3.5.1: Proportion of adults who report having high non-HDL blood cholesterol levels	Developmental	Not available		To be determined
3.6: Proportion of adults 18-75 who had an LDL-c level of less than 100 mg/dL during the measurement year and the year prior, after discharge for an acute cardiovascular event*	HEDIS*	42.9%	2010	49.3% (15% improvement)
3.7: Utilization of appropriate therapeutic treatment interventions and application of clinical practice guidelines for treating patients with cardiovascular disease and stroke events	Developmental	Not available		To be determined
3.8: Proportion of adult heart attack and stroke survivors who receive outpatient cardiac and stroke rehabilitation following discharge	Potential Data Source: BRFSS	Not available		To be determined
3.9: Number of Texas DSHS recognized stroke facilities that can provide multiple levels of stroke care to meet the full continuum of stroke care from EMS activation to outpatient rehabilitation and support	DSHS	92	2012	100

Goal 4: To collect comprehensive heart disease and stroke data that are readily available to assess, monitor, and describe the burden of heart disease and stroke in Texas.

Benchmark Indicators	Baseline			2017 Target (Target Setting Method)
	Data Source	Measure	Year	
4.1: Statewide monitoring and surveillance of emergency health care system information (Developmental)	Potential Data Source: Texas EMS surveillance system	Not available		To be determined
4.2: Accessibility to data related to heart disease and stroke (Developmental)	Potential Data Source: Data Users Group Survey	Not available		To be determined
4.3: Data linkages to utilize available data to enhance the assessment of the burden of disease and risk factors in Texas (Developmental)	Potential Data Source: Data Users Group Survey	Not available		To be determined
4.4: Utilization of surveillance data to identify health disparities and populations at risk to guide policies and programs that will address needs (Developmental)	Potential Data Source: Data Users Group Survey	Not available		To be determined

*Note: HEDIS data reflects a population of HMO members, adults 18-85 years of age with hypertension ⁴¹

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Appendix I – Resources for Action

The following organizations provide public and professional education, programs, and resources for cardiovascular disease and stroke. This is not intended to be an exhaustive list but provides a sampling of what is already available from credible sources. Before selecting and using any program, seek information regarding the efficacy or adaptability of the program for your intended population.

American Heart Association/American Stroke Association – www.americanheart.org

- Get With the Guidelines – hospital guidelines for heart disease and stroke
- Acute Stroke Treatment Program – hospital-based guide for primary stroke centers
- Power to End Stroke – public awareness campaign that embraces and celebrates African Americans
- Mission: Lifeline – guidelines for timely STEMI treatment for health care providers
- Heartsaver AED – workplace training program
- Go Red For Women – public awareness campaign
- Go Red Por Tu Corazón – public awareness campaign for Hispanic women
- CPR Anytime – general public training program
- Heart 360 – patient portal to track and manage heart health

Centers for Disease Control and Prevention – www.cdc.gov

- Guide to Community Preventive Services – guide to evidence-based practices
- Heart Healthy and Stroke Free – creating social environment changes
- Weight Management Research to Practice Series – evidence-based approaches
- Successful Business Strategies to Prevent Heart Disease and Stroke Toolkit – making the business case
- Promoting Physical Activity: A Guide for Community Action
- Million Hearts – campaign to prevent 1 million heart attacks and strokes in five years by coordinating national efforts

Texas Department of State Health Services – www.dshs.state.tx.us

- Diabetes and Disparities: A Plan to Prevent and Control Diabetes in Texas, 2008-2009
 - www.dshs.state.tx.us/diabetes/default.shtm

- Updates for the Strategic Plan for the Prevention of Obesity in Texas 2008
 - www.dshs.state.tx.us/obesity/default.shtm
- Cardiovascular Disease and Stroke Program – www.dshs.state.tx.us/wellness/default.shtm
 - Stroke Public Education Toolkit - www.dshs.state.tx.us/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=8589959927
 - Heart and Stroke Healthy City Recognition Program - www.dshs.state.tx.us/wellness/hshcrp.shtm
- Building Healthy Texans – http://www.wellness.state.tx.us/physical_activity.htm
 - Active for Life Online – group physical activity program
 - Company Health and Wellness – ideas for building employee awareness and participation in physical activities
 - TEXERCISE – statewide fitness campaign developed by the Texas Department of Aging and Disability Services (DADS)
 - Five A Day – community fruit and vegetable promotion program
 - Lighten Up Texas – worksite weight loss team competition
 - Maintain No Gain – maintaining weight over the holidays
 - Skyscraper Climb – worksite physical activity
 - Walk Across Texas! - <http://walkacrosstexas.tamu.edu/>
- Long Live Texans – longlivetexans.com

Brain Attack Coalition - www.stroke-site.org/

- Guidelines and resources for stroke initiatives

Department of Health and Human Services - <http://www.hhs.gov>

- Healthy People 2020 www.healthypeople.gov/
- Agency for Healthcare Research and Quality – <http://ahrq.gov>
- National Heart, Lung and Blood Institute – www.nhlbi.nih.gov
 - Hearts N’ Parks Community Mobilization Guide: Obesity and heart disease education initiative
 - Your Guide to Lowering Your Blood Pressure With DASH
 - Healthy Heart, Healthy Homes
 - Hypertension Guidelines - www.nhlbi.nih.gov/guidelines/hypertension/

- Cholesterol Guidelines - www.nhlbi.nih.gov/guidelines/cholesterol/index.htm

National Stroke Association - www.stroke.org

- Information and resources for stroke initiatives

Wellness Councils of America - www.welcoa.org/

- Workplace wellness resources

Texas Education Agency Approved Coordinated School Health Programs

- Bienestar Health Program - Office Phone: 210-533-8886
Toll Free: 1-866-676-7472 - Web site: www.sahrc.org
- CATCH
Telephone: 512-346-6163
Web site: www.sph.uth.tmc.edu/catch/
- The Great Body Shop
Telephone: 800-782-7077
Web site: www.thegreatbodyshop.net/
- SPARK + Healthy and Wise by Caprock Press
Telephone: 800-383-1927
Web site: www.caprockpress.com/ or www.sparkpe.org

Bridges to Excellence - www.bridgestoexcellence.org/

- Quality improvement program for the health care industry

Chronic Disease Self-Management Program - <http://patienteducation.stanford.edu/programs/cdsmp.html>

- Patient oriented program for self-management of chronic disease

American Pharmacists Association Foundation -
www.pharmacist.com/AM/Template.cfm?Section=Project_ImPACT

- Project ImPACT - practice model for pharmacists to improve patient outcomes

Appendix II – Data Sources

BRFSS - The Texas Behavioral Risk Factor Surveillance System, initiated in 1987, is a federally and state funded telephone survey conducted on a monthly basis of 500 randomly selected Texas households to collect data on lifestyle risk factors contributing to the leading causes of death and chronic diseases. As a primary source for comprehensive statewide data on preventive health practices and health risk behaviors, BRFSS is an important tool for decision-making throughout DSHS and the public health community. Public and private health authorities at the federal, state, and local levels rely on BRFSS to identify public health problems, design policy and interventions, set goals, and measure progress toward those goals.

YRBSS - Youth Risk Behavior Surveillance Survey monitors priority health-risk behaviors and the prevalence of obesity and asthma among youth and young adults. The YRBSS includes a national school-based survey conducted by the Centers for Disease Control and Prevention and state, territorial, tribal, and local surveys conducted by state, territorial, and local education and health agencies and tribal governments.

VS - Texas Vital Statistics provides records for births or deaths that have occurred in Texas from 1903 to the present. Vital statistics refers to demographic data on births, deaths, fetal deaths, abortions, marriages, and divorces. At the Department of State Health Services, vital statistics functions are distributed within two organizational units: the Center for Health Statistics (CHS) and the Vital Statistics Unit (VSU). The Data Management team within CHS is responsible for developing, analyzing, and distributing public health data

derived from records of vital events. The team also responds to statistical data requests and develops the Texas Vital Statistics Annual Report.

HEDIS - The Health Plan Employer Data and Information Set consists of standardized performance measures designed for comparing the quality of care of managed care organizations.

As reported by the *State of Managed Care Quality (2004)*, this tool is used by more than 90 percent of America's health plans to measure performance on important dimensions of care and service. HEDIS® is developed and maintained by the National Committee for Quality Assurance (NCQA), a private non-profit organization committed to assessing, reporting, and improving the quality of care provided by organized health care delivery systems.

Texas EMS/Trauma Registry - The Texas EMS/Trauma Registry is a legislatively mandated program responsible for collecting, analyzing, and disseminating information on emergency medical services runs and the occurrence of trauma in Texas including spinal cord injuries, traumatic brain injuries, and submersion injuries. EMS providers and acute care hospitals, designated to provide trauma care, must report trauma cases to the EMS/Trauma Registry. The EMS/Trauma Registry uses information on injuries to investigate the causes of injuries, their distribution, health outcomes, and associated costs. Local communities and providers rely on the data from the EMS/Trauma Registry to evaluate the trauma system in Texas and to plan injury prevention programs.

Appendix III – Texas Partnership Steering Committee

The following people/organizations have all generously contributed their time to the development of this *Plan* as members of the Texas Cardiovascular Disease and Stroke Partnership.

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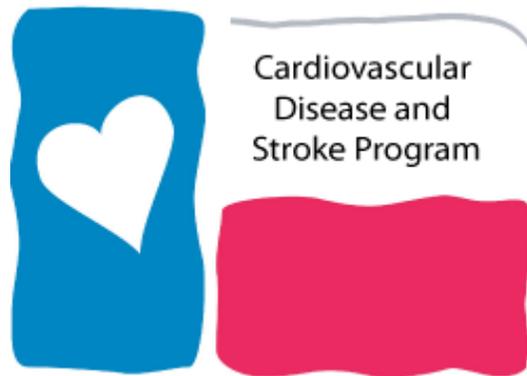
Appendix IV - Invitation to Participate

As the Partnership continues to work together to implement the 2013 *Plan*, membership representation that reflects the diversity of CVD and stroke stakeholders and the populations and communities impacted by CVD and stroke in Texas will be an important factor.

If you and your organization can join the Partnership as it moves forward with taking concrete action to implement the 2013 *Plan*, please visit the Partnership web page at

<http://www.dshs.state.tx.us/heart/Texas-Cardiovascular-Disease-and-Stroke-Partnership.aspx>





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