Texas Council on Cardiovascular Disease and Stroke State Plan

As Required by Texas Health and Safety Code Section 93.051

December 2024

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Executive Summary

Heart disease and stroke account for almost 30 percent of deaths in Texas. Recognizing this as a major public health issue, the Texas Legislature created the Texas Council on Cardiovascular Disease and Stroke (Council). The Council is comprised of healthcare professionals, academics, and citizens appointed by the Governor and state agency representatives designated by agency executive directors. Texas Health and Safety Code, Section 93.051, requires the Council to develop a state plan to reduce the morbidity, mortality, and economic burden of cardiovascular disease and stroke.

In 2019, the Council published a five-year state plan for 2019-2023. House Resolution 435, 88th Legislature, Regular Session, 2023, directed that the state plan be updated.

The Texas Council on Cardiovascular Disease and Stroke State Plan (State Plan) provides areas of focus and related strategies to reduce death and disability from heart disease and stroke.

The areas of focus are:

- Promote healthy behaviors;
- Enhance quality of care; and
- Improve coordinated systems of care.

Many of the strategies in the State Plan align with U.S. Health and Human Services Healthy People 2030 objectives and the recommended interventions found in the Centers for Disease Control and Prevention (CDC) The Guide to Community Preventive Services.

The State Plan can be adapted to account for emerging evidence and best practices. It is designed to serve diverse stakeholders both in and outside of the public health community. The State Plan is to be used to support strategic partnerships, acting as a catalyst for collaborations that improve cardiovascular disease and stroke control.

Introduction

Heart disease and stroke are sometimes collectively referred to as cardiovascular disease (CVD). Heart disease is a condition where the heart and blood vessels are not working properly due to a buildup of plaque in the arteries, also known as atherosclerosis. This can cause a heart attack (a blockage of blood flow to the heart) or stroke (a blockage of blood flow to the brain).[1]

In 2021, nearly 5.2 percent of adults reported a diagnosis of heart disease and 3.1 percent reported a stroke diagnosis.[2] CVD continues to be the leading cause of death both nationally and in Texas. Additionally, CVD has a significant economic impact. Texas hospital charges for heart disease totaled nearly $25 billion in 2021. Of these charges, Medicare claims accounted for 62.6 percent (about $15.8 billion) and Medicaid claims accounted for 5.1 percent (about $1.2 billion).[3]

Risk Factors

The three most common CVD risk factors are:

- High blood pressure;
- High cholesterol; and
- Tobacco smoking.[4]

Addressing controllable risk factors such as physical inactivity, obesity, and tobacco use will decrease the risk of developing heart disease. 36.1 percent of Texas adults are obese, which significantly increases their risk of developing heart disease or

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[1] American Heart Association, What is Cardiovascular Disease? Retrieved from https://www.heart.org/en/health-topics/consumer-healthcare/what-is-cardiovascular-disease.
[2] Texas Department of State Health Services, Center for Health Statistics, Texas Behavioral Risk Factor Surveillance System Public Use Data File, 2021.
[3] Texas Department of State Health Services, Center for Health Statistics, Texas Health Care Information Collection (THCIC), Inpatient Hospital Discharge Public Use Data File, 2021.
[4] Centers for Disease Control Heart Disease, Heart Disease Risk Factors. Retrieved from https://www.cdc.gov/heart-disease/risk-factors/index.html.

having a stroke.[5] Some risk factors for heart disease cannot be controlled, such as age or family history.

Disparities

Health disparities exist among Texans with heart disease and stroke, including among racial and ethnic groups, socioeconomic factors, and geographical regions. To address these disparities, interventions need to be tailored to improve health outcomes for those most affected. This includes building partnerships among community, political, and healthcare leaders to address non-medical drivers of health (NMDOH)[6]. Providing support and expanding connections between healthcare and the community can help address social needs. Epidemiologists collect and share data about NMDOH to inform development of effective community interventions.

Age

Individuals aged 65 years and older experience the highest rates of heart disease and stroke compared to all other age groups. Normal aging leads to a thickening and possible hardening of the heart walls, arteries, and valves.[7] Older individuals who experience hardening of the arteries are more likely to develop CVD, leading to a higher risk of cardiac episodes and stroke.

Race/Ethnicity

Rates of heart disease and stroke are highest among non-Hispanic Black individuals. The prevalence of nearly all risk factors for heart disease and stroke (high blood pressure, high cholesterol, and tobacco smoking) is also higher among non-Hispanic Black individuals compared to all other racial and ethnic groups. Almost 43 percent of non-Hispanic Black adults aged over 18 years have high blood

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[5] Texas Department of State Health Services, Center for Health Statistics, Texas Behavioral Risk Factor Surveillance System Public Use Data File, 2021.
[6] NMDOH are the conditions in the places where people live, learn, work, and play that affect a wide range of health risks and outcomes. Retrieved from: https://www.hhs.texas.gov/about/process-improvement/improving-services-texans/medicaid-chip-quality-efficiency-improvement/non-medical-drivers-health.
[7] National Institutes of Health, Heart Health and Aging, 2018. Retrieved from https://www.nia.nih.gov/health/heart-health-and-aging.

pressure and experience the onset of heart disease and stroke at relatively earlier ages.[8]

Socioeconomics

Four socioeconomic economic status (SES) measures have been consistently associated with CVD: income level, educational attainment, employment status, and neighborhood socioeconomic factors.[9] Low SES is associated with poor access to care and healthy foods. Of the 7.3 percent of Texas adults who had CVD in 2021, approximately 33.9 percent earned an annual household income of less than $25,000.[10] Interventions focused on behavior change for physical activity, smoking, or alcohol; community-based programs; health education; and local and federal health policies could address CVD among lower-SES populations.

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[8] Texas Department of State Health Services, Center for Health Statistics, Texas Behavioral Risk Factor Surveillance System Public Use Data File, 2021.

[9] Socioeconomic Status and Cardiovascular Outcomes, 2018, Circulation. Retrieved from https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.117.029652.

[10] Texas Department of State Health Services, Center for Health Statistics, Texas Behavioral Risk Factor Surveillance System Public Use Data File, 2011-2021.

Promoting Health Behaviors

Heart disease and stroke are largely preventable. Addressing risk factors can reduce an individual's chance of experiencing heart disease or stroke. The State Plan prioritizes establishing and promoting healthy eating, physical activity, diabetes control, and tobacco-free lifestyles, with an emphasis on access to resources for disproportionately impacted populations.

Strategies

- Educate the public on disease self-management and approaches to reduce cardiovascular disease and stroke risk among disproportionately impacted populations.

- Increase access to community outreach and worksite programs that address healthy eating, physical activity, smoking cessation, social support, stress management, and healthy weight.

- Identify, disseminate, and promote use of evidence-based guidelines for hypertension diagnosis, treatment, and management.

Risk Factors

Overweight and Obesity

The prevalence of overweight and obesity has increased for the past few decades. In 2021, more than one-third (33.9 percent) of adults in the U.S. and 36.1 percent of adults in Texas were obese.[11] The prevalence of obesity was higher among women than men and higher among non-Hispanic Black and Hispanic adults compared with other racial and ethnic groups.[12] For more information on DSHS activities to reduce overweight and obesity, please visit the DSHS Obesity Prevention Program website.

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[11] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System Survey Data, 2021.
[12] Texas Department of State Health Services, Center for Health Statistics, Texas Behavioral Risk Factor Surveillance System Public Use Data File, 2021.

Physical Inactivity

Regular physical activity is associated with reduced risk for chronic disease and a healthier, longer life. When done regularly, moderate- and vigorous-intensity aerobic activity can lower a person's risk for coronary heart disease.[13] Cardiovascular benefits of regular physical activity include lower risk for heart disease, high blood pressure, stroke, abnormal blood cholesterol and triglycerides (type of fat), diabetes, and obesity.[14] According to the current Physical Activity Guidelines for Americans, adults need 150 minutes of moderate-intensity (such as brisk walking) physical activity a week. Despite the benefits of physical activity, most Texans do not achieve the recommended amount of physical activity. In 2020, 24.2 percent of adults aged 18 years and over met physical activity guidelines for both aerobic and muscle-strengthening activities.[15] For more information on DSHS activities to increase physical activity, please visit the DSHS Obesity Prevention Priority Strategies guidance.

Poor Nutrition

Nutrition plays an important role in an individual's overall health and quality of life. To reduce risk of heart disease and stroke, the American Heart Association (AHA) encourages individuals to know the caloric intake necessary to maintain a healthy weight, which is based on several factors, including age, sex, and level of physical activity.[16] High intake of saturated and trans fats, commonly found in red meat, fried foods, and many processed snacks, can raise low-density lipoprotein (LDL or "bad") cholesterol levels in the blood. Elevated LDL cholesterol is a major risk factor for atherosclerosis (hardening of the arteries) and coronary artery disease. Consuming meals with high salt content can lead to high blood pressure, which is a significant risk factor for heart disease. A meal rich in fruits and vegetables is associated with a lower risk of heart disease due to their high fiber, vitamin,

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[13] Coronary heart disease is a type of heart disease where the arteries of the heart cannot deliver enough oxygen-rich blood to the heart. Retrieved from: https://www.nhlbi.nih.gov/health/coronary-heart-disease.

[14] U.S. Department of Health and Human Services, Physical Activity Guidelines for Americans, 2018. Retrieved from https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf.

[15] Texas Department of State Health Services, Center for Health Statistics, Texas Behavioral Risk Factor Surveillance System Public Use Data File, 2021.

[16] American Heart Association, The American Heart Association Diet and Lifestyle Recommendations, 2015. Retrieved from https://www.heart.org/en/healthy-living/healthy-eating/eat-smart/nutrition-basics/aha-diet-and-lifestyle-recommendations.

mineral, and antioxidant content. Meal plans such as the Mediterranean and Dietary Approaches to Stop Hypertension have been shown to reduce the risk of heart disease due to their emphasis on whole foods, lean proteins, and healthy fats.[17] For information on DSHS activities to improve nutrition, please review the DSHS Obesity Prevention Priority Strategies guidance linked above.

Diabetes

Diabetes is a chronic disease that affects the way the body produces or uses insulin, which helps turn sugar into energy. Without functioning insulin, individuals with diabetes can experience a build-up of sugar in the bloodstream. While a devastating chronic disease on its own, diabetes is also a major risk factor for heart disease and stroke. Due to the relationship between diabetes and heart disease, diabetes management involves maintaining a healthy diet, controlling blood glucose, blood pressure, and cholesterol levels. In 2022, 13.9 percent of Texas adults 18 years and older reported having a diabetes diagnosis.[18] For more information on DSHS activities to reduce diabetes, please visit the DSHS Diabetes Prevention and Control Program website.

Tobacco Use

Tobacco use remains the single most preventable cause of death and disease in the U.S. Smoking is a major cause of heart disease and stroke and is responsible for 25 percent of deaths from heart disease.[19] Smoking can:

- Raise triglycerides and lower high-density lipoproteins (HDL or "good") cholesterol;

- Make blood more likely to clot;

- Damage blood vessels and increase plaques; and

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[17] American Heart Association, Heart Disease and Stroke Statistics 2018 Update. Retrieved from https://www.ahajournals.org/doi/10.1161/CIR.0000000000000558.
[18] Texas Department of State Health Services. *Behavioral Risk Factor Surveillance System*. Retrieved from https://healthdata.dshs.texas.gov/dashboard/surveys-and-profiles/behavioral-risk-factor-surveillance-system.
[19] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General,2014. Retrieved from https://www.hhs.gov/sites/default/files/consequences-smoking-exec-summary.pdf.

- Cause thickening and narrowing of blood vessels.

In 2022, 11.8 percent of Texas adults reported current cigarette use.[20] Exposure to secondhand smoke can also cause coronary heart disease, heart attack, and stroke. Even briefly breathing secondhand smoke can damage the lining of blood vessels and cause blood to become 'stickier,' which can trigger a deadly heart attack.[21] For more information on DSHS activities to reduce tobacco usage, please visit the DSHS Tobacco Prevention and Control Program website.

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[20] Texas Department of State Health Services. (2022). *Prevalence of Cigarette Smoking Among Adults, by Sex, Age Groups, and Race/Ethnicity, Texas, 2022*. Retrieved from https://www.dshs.texas.gov/tobacco/tobacco-reports.
[21] Centers for Disease Control and Prevention, Smoking and Heart Disease, Stroke, and Peripheral Artery Disease. Retrieved from www.cdc.gov/tobacco/campaign/tips/diseases/heart-disease-stroke.html.

Enhance Quality Care

Promoting partnerships between health systems and community groups is imperative to provide enhanced and coordinated patient care. Community partners include community health workers (CHWs), local health departments (LHDs), and pharmacists. Health systems include Federally Qualified Health Centers (FQHCs), hospitals, and clinical practices. These groups can work together to implement effective and evidence-based strategies to reduce the burden of heart disease and stroke by controlling high blood pressure and high cholesterol. The following strategies leverage different sectors of the health workforce to provide high-quality care to prevent and manage complications from heart disease and stroke and improve outcomes.

Strategies

- Increase access to preventive care, disease management, rehabilitation, and specialty care for disproportionately impacted populations.

- Increase the use and training of team-based care members, with a focus on CHWs, to support patients with uncontrolled high blood pressure and/or high cholesterol.

- Expand the pharmacist's role through medication therapy management (MTM) to increase access to primary care in underserved populations.[22]

- Increase the use of self-measured blood pressure monitoring tied with clinical support.

- Increase the use of health information technology to inform screening, prevention, and CVD and stroke management programs.

- Improve and increase pharmacy-based interventions and medication adherence for patients in disproportionately impacted populations through team-based care (e.g., community pharmacists and CHWs) and by addressing NMDOH.

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[22] MTM is a range of services that helps patients get the most benefit from their medication and prevent medication problems. See: American Pharmacists Association Foundation, Medication Therapy Management, 2024. Retrieved from https://www.aphafoundation.org/medication-therapy-management.

Risk Factors

High Blood Pressure

High blood pressure, also known as hypertension, is the primary risk factor for CVD. It occurs when the force of blood flowing through blood vessels is consistently too high. High blood pressure forces the heart to work harder to pump blood throughout the body. Over time, hypertension can:

- Lead to thickening of the heart muscle;

- Damage to the inner lining of arteries and blood vessels in the brain;

- Weaken the heart muscle, impairing its ability to pump effectively;

- Cause weakening and bulging walls of blood vessels; and

- Disrupt the electrical signals that control the heart's rhythm.

The damage caused by hypertension can cause complications such as coronary heart disease and stroke.

In 2021, 32.2 percent of Texas adults reported a high blood pressure diagnosis. Among Texas adults with heart disease and stroke, 71.9 percent and 79.6 percent had high blood pressure, respectively.[23] Eliminating hypertension could reduce CVD mortality by 30.4 percent among men and 38.0 percent among women.[24] Eliminating hypertension would have a larger impact on CVD mortality than the elimination of all other risk factors among women and all other risk factors except smoking among men.

To address hypertension, partnerships between health systems and community groups in Texas are necessary. These partnerships should focus on comprehensive care services, integrating CHWs into healthcare teams, engaging pharmacists in MTM and remote patient monitoring, leveraging telehealth services to increase access to preventative care, and implementing lifestyle change programs.

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[23] Texas Department of State Health Services, Center for Health Statistics, Texas Behavioral Risk Factor Surveillance System Public Use Data File, 2021.
[24] National Library of Medicine, Sex Differences in Cardiovascular Consequences of Hypertension, Obesity, and Diabetes, 2022. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9503760/.

High Cholesterol

Cholesterol is a waxy substance that the body requires to build cells and to make vitamins and some hormones. Elevated cholesterol levels typically do not cause symptoms. However, too much cholesterol can become problematic. Long-term exposure to elevated cholesterol substantially increases an individual's lifetime risk for heart disease. For every 10 years between the ages of 35 and 55 that an individual has even mildly elevated cholesterol, the risk of heart disease may be increased by nearly 40 percent.[25]

Current AHA guidelines recommend that providers measure a fasting lipoprotein profile (total cholesterol, LDL, HDL, and triglyceride) every four to six years for adults 20 years and older. Provider adherence to screening guidelines and patient education on their personal cholesterol levels are critical components to reduce high cholesterol. 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 heart disease and stroke.[26] For more information on DSHS activities to reduce heart disease and stroke, please visit the DSHS Heart Disease and Stroke Program website.

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[25] American Heart Association, High Cholesterol During Young Adulthood Raises Heart Disease Risk, 2015. Retrieved from https://www.heart.org/en/news/2018/06/27/high-cholesterol-during-young-adulthood-raises-heart-disease-risk.

[26] U.S. Department of Health and Human Services, Healthy People 2030 Heart Disease and Stroke Objectives. Retrieved from https://health.gov/healthypeople/objectives-and-data/browse-objectives/heart-disease-and-stroke.

Improving Coordinated Systems of Care

Early identification and treatment of heart attack, cardiac arrest, and stroke reduces the risk of heart muscle damage, minimizes the risk of functional disability, and decreases burden on systems of care. Expansion of the healthcare workforce, improvement of early identification and treatment by non-clinical bystanders, and improved screening and timely, quality treatment are necessary to effectively prevent, treat, and manage heart disease and stroke.

Priorities for improving systems of care include:

- Increasing the number of adults able to identify the signs and symptoms of heart attack and stroke;

- Developing and implementing screening and treatment guidelines; and

- Increasing the quality and accessibility of long-term care.

Stakeholders are encouraged consider the impact of NMDOH and promote policies and practices that improve systems of care to reduce death and disability due to CVD and stroke.

Strategies

- Increase the active emergency medical services (EMS) workforce through coordinated campaigns, such as training scholarships.

- Promote continuity and collaboration of care at each point on the chain of treatment.

- Improve community-clinical linkages to screen and refer patients to advance early detection, prevention, disease management, and treatment.

- Improve timely care and coordination between clinical partners for treatment of heart attack, cardiac arrest, and stroke patients.

- Develop and expand public education programs that increase understanding about responding to the signs and symptoms of heart attack, cardiac arrest, and stroke.

- Expand the reach of educational messaging and programming to increase knowledge of early warning signs of heart attack and stroke and how to respond, with an emphasis on the impact of NMDOH.

Systems of Care

Stroke Systems of Care

Stroke is the third leading cause of death in Texas. Stroke can cause a range of disabilities, from loss of speech to paralysis of limbs and other neurological impairments. It is a leading cause of long-term disability and a major economic burden in terms of healthcare costs and lost productivity.[27]

DSHS designates medical facilities that meet the requirements to provide stroke treatment as comprehensive, advanced, primary, or acute stroke ready facilities, based on services provided. Services may include acute stroke care, supportive care, transport, and comprehensive stroke care. Comprehensive stroke care includes the full range of stroke treatments, rehabilitation, and long-term care. It is essential that EMS personnel provide advance notice to receiving hospitals to ensure stroke patients receive timely treatment. In 2019, EMS provided advance notice to the receiving hospital for about half of all cases transported for stroke.[28] Timely treatment to reduce the impact of a stroke requires early recognition of signs and symptoms and rapid response. For an interactive map of stroke-designated hospitals in Texas, see the [Texas EMS/Trauma Systems Interactive Map](#).

Emergency System of Care

Rapid diagnosis and treatment can mean the difference between recovery, disability, or death. The U.S. Department of Health and Human Services Healthy People 2030 strategies set developmental and improvement objectives for increasing access to rapid response pre-hospital emergency services and coverage for basic or advanced life support. An example of an improvement objective includes increasing the rate of bystander CPR for non-traumatic cardiac arrests. An example of a developmental objective includes increasing the proportion of heart attack patients who get timely fibrinolytic treatment, or medication that breaks down blood clots. The Healthy People 2030 strategies are data-supported national

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[27] American Heart Association, Heart Disease and Stroke Statistics 2018 Update. Retrieved from https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000000558.

[28] Texas Department of State Health Services, Texas Stroke System of Care Report, 2020. Retrieved from https://www.dshs.texas.gov/sites/default/files//heart/pdf/2020_Stroke_Report-(FINAL).pdf.

objectives to improve the health and well-being of U.S. citizens over the next decade.

The average EMS response time varies by year and between urban and rural areas. The Governor's EMS and Trauma Advisory Council develops and updates the [Texas Emergency Healthcare Strategic Plan](). To improve cardiac and stroke response times within the emergency healthcare system, EMS, cardiac and stroke entities, and Regional Advisory Councils (RACs) should develop, implement, and continually improve regional plans of care. Texas is divided into twenty-two trauma service areas (TSAs). Each TSA has established a RAC. DSHS recognizes RACs as the coordinating entities responsible for the development and advancement of the trauma and emergency healthcare system within the bounds of their defined TSAs.

Heart Attack System of Care

The heart attack system of care ranges from acute care to rehabilitation services. Patients who receive treatment within the first or second hour after the onset of heart attack symptoms experience significant reductions in risk of disability or death.[29] While early treatment and continued management is crucial, many areas of Texas do not have capacity for emergency cardiac care.

In 2019, approximately four percent of the Texas population experienced a heart attack.[30] In 2019, 81.5 percent of patients directly admitted to units with expertise in cardiovascular event care via personal vehicle received treatment within 90 minutes, which accounts for 61.3 percent of cases arriving at hospitals.[31] Appropriate identification and utilization of treatment for cardiovascular events and improving and expanding access to specialized care are vital.

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[29] American Heart Association, Automated External Defibrillation Implementation Guide, 2014. Retrieved from https://cpr.heart.org/-/media/CPR-Files/Training-Programs/AED-Implementation/AED-Guide.pdf.
[30] Texas Department of State Health Services, Texas ST-Elevation Myocardial Infarction (STEMI) and Heart Attack, System of Care Report, 2020. Retrieved from https://www.dshs.texas.gov/sites/default/files/heart/pdf/2020_STEMI-Report-(FINAL).pdf.
[31] Ibid.

Conclusion

Heart disease and stroke have a significant public health and economic impact on Texas. The State Plan provides a comprehensive framework to guide stakeholders in addressing heart disease and stroke by promoting healthy behaviors, enhancing quality of care, and improving coordinated systems of care. By implementing strategic decisions, stakeholders can mitigate premature deaths resulting from heart disease and stroke and enhance the quality of life for all Texans.

Appendix A. Resources for Action

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

National Resources

American Heart Association/American Stroke Association website

- Get with the Guidelines – Hospital guidelines for heart disease and stroke
- Acute Stroke Treatment Program – Hospital-based guide for primary stroke centers
- Mission: Lifeline – Guidelines for timely STEMI treatment for healthcare 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
- Hypertension Guidelines – American College of Cardiology resource to help people address high blood pressure.

Centers for Disease Control and Prevention website

- Million Hearts – Campaign to prevent one million heart attacks and strokes in five years by coordinating national efforts

Healthy People 2030

Healthy People is a federal initiative that sets measurable goals to improve health and well-being in the U.S. over the next decade.

National Heart, Lung, and Blood Institute (NHLBI) website

The NHLBI is the nation's leader in the prevention and treatment of heart, lung, blood, and sleep disorders. They have published clinical guidelines on cholesterol.

Self-Management Resource Center website

The Self-Management Resource Center provides self-management programs to help people and their caregivers control their symptoms, better manage their health problems, and lead fuller lives.

U.S. Preventive Services Task Force website

The U.S. Preventive Services Task Force is a panel of national experts in disease prevention and evidence-based medicine. The task force works to improve the health of people nationwide by making evidence-based recommendations about clinical preventive services.

Texas Resources

Texas Department of State Health Services website

- Heart Disease and Stroke Program webpage
- Texas Council on Cardiovascular Disease and Stroke webpage