Heart Disease and Stroke Awareness and Prevention

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The Pennsylvania Public Health Training Center (PAPHTC) is one of 33 training centers located in schools of public health and other academic institutions across the country. The Pennsylvania Public Health Training Center is based in the Center for Public Health Practice at the University of Pittsburgh Graduate School Of Public Health, operated in partnership with the Drexel University School of Public Health is based in the University of Pittsburgh Center for Public Health Practice (CPHP) and operated in partnership with Health Resources and Services Administration (HRSA). The Center for Public Health Practice has led a HRSA-funding training center since 1999.

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INTRODUCTION

The good old days have come and gone when health was considered the sole responsibility of the medical practitioner, family doctor, or some other “healing-authority”, and hardly ever the responsibility of the individual. All that was needed in those days to assign an individual with a clean bill of health was a visit to the doctor or a healing authority. Health as we understand it today has a much broader view and requires more responsibilities from the individual and less reliance on healing professionals. The communicable diseases of the past that killed people during major epidemics, from which few people ever survived, have almost been completely eradicated. Those communicable and killer diseases of the past have been replaced today by non-communicable, lifestyle related, but still killer diseases, led by cardiovascular or diseases of the heart and blood vessels.

Among the diseases feared the world over are those involving the heart and blood vessels, also called cardiovascular diseases (CVD). Heart or coronary artery disease is a form of CVD that accounts for more deaths in the United States than cancer, unintentional injuries, and other diseases combined. The ever expanding presence of public/community health educators and other allied health professionals in schools and other community entities and their proximity with grass-root citizens is very important in promoting health and preventing disease. These primary or front-line professionals continue to play an invaluable role in educating the public about reducing the risk factors of heart and other diseases, eliminating related disparities, and improving the quality of lives for Americans. Knowledge of the etiology and risk factors of heart disease is crucial in empowering allied health professionals to form partnerships with other community entities in reducing the risk factors of heart disease among Americans.

The material in this booklet was developed with special consideration for a variety of community and school health professionals who may not have extensive training in public health but feel challenged to join the Healthy People 2020 partnership to reduce the risk of heart disease at the community level. In a user-friendly format this booklet provides basic information about heart disease prevention and stroke awareness. It is divided into four modules.

This booklet provides information about the heart, cardiovascular system and cardiovascular diseases which are the leading cause of death in America. The circulation of blood through the body is discussed as well as identification of controllable and uncontrollable risk factors associated with the heart diseases. Major forms of heart diseases, steps that can be taken to lower their risk and different forms of treatment are discussed. In addition, suggested activities that allied health professionals and trained volunteers can use at community groups are discussed.
Heart Disease and Stroke Awareness and Prevention at the Community Level

The Cardiovascular System and Circulatory Function

The cardiovascular system comprises the heart, which pumps the blood, and blood vessels which circulate the blood containing oxygen, carbon dioxide, nutrients, hormones, enzymes and waste products. There are two main circulatory systems, pulmonary and systemic.

- The heart is a four-chambered muscular organ about the size of one's fist.
- Each side of the heart has upper chambers called the atria and lower chambers called ventricles.
- Blood returns to the heart through vena cava (two large veins) into the right atrium, then into the right ventricle—ventricular contraction forces the blood out of the heart, through the pulmonary artery, and into the lungs for re-oxygenation. This process is called pulmonary circulation.
- The blood then returns through the pulmonary veins to the left atrium, then to the left ventricle, and finally into systemic circulation through the aorta, which is the body’s largest artery, then to the rest of the body. This is the systemic circulation.
- Veins carry blood to the heart; arteries carry it away from the heart.
- The contraction of the ventricles exerts a pressure called systole, and the pressure of the relaxed heart is called the diastole. This forms the basis for blood pressure readings.
- Arterial walls are thick and elastic; veins have thinner walls.
- The aorta branches into coronary arteries which supply blood to the heart itself and ultimately into tiny capillaries.
- Veins eventually become small venules and connect with the capillaries.
- The action of the heart is controlled by an electrical signal that originates in a group of specialized cells, the pacemaker, located in the right atrium.
- The heart rate remains steady unless the brain signals it to change in response to danger, exhaustion, or other stimuli.

Risk Factors for Cardiovascular Disease

Risk factors for cardiovascular disease (CVD) can be classified as controllable and uncontrollable; controllable risk factors are lifestyles-related and can be changed by changing individual behaviors. Uncontrollable risk factors are not behavior-related and often not under the control of an individual.
1. Cigarette smokers

Cigarette smokers have two to three more times the risk of heart attack than nonsmokers because cigarettes contain nicotine and other additives that are harmful to the heart.

- As a stimulant, nicotine causes increased blood pressure and heart rate.
- Carbon monoxide in cigarette smoke displaces oxygen in the blood.
- Smoking damages the linings of arteries and reduces beneficial levels of high-density lipoproteins.
- Smoking causes platelets to become sticky and increases blood thickness.
- Environmental tobacco smoke (ETS) caused by smoking has been linked to cardiovascular disease. The risk of death from coronary heart disease increases up to 30% to non-smokers exposed to ETS.

2. High blood pressure

High blood pressure is both a risk factor for many forms of CVD, and is a disease in itself.

- High blood pressure occurs when increased pressure within the vascular system is exerted against the walls of the arteries. This is usually caused by hardening of the arteries with plaque.
- The heart has to work harder, enlarges, weakens and eventually fails.

3. Cholesterol

Cholesterol is a member of the fat family. It is essential to the body and needed for the following functions: digestion of fat, helps the skin produce Vitamin D, helps develop adrenal and sex hormones, and insulates nerve tissue in the brain and spinal cord. In excess, cholesterol can clog arteries and increase risk of CVD.

- Desirable cholesterol levels vary depending on age, sex, heredity, and other factors.
- The body produces its own supply of cholesterol, and also obtains some from foods rich in saturated fats (mostly animal sources) that individuals consume.
- Cholesterol is transported in the blood in lipoproteins.
- Low-density lipoproteins (LDLs) carry cholesterol from the liver to organs and tissues that require it. Excess amounts are deposited in the arteries. For this reason, LDLs are considered “bad” cholesterol.
- High-density lipoproteins (HDLs) carry unused cholesterol back to the liver for recycling; they are known as “good” cholesterol.
- The risk of CVD increases with increasing blood cholesterol levels.
- A total cholesterol level below 200 milligrams per deciliter (mg/dl) indicates a relatively low risk of CVD.
- Levels over 240 mg/dl indicate a high risk of CVD.
• High LDL levels and low HDL levels are associated with a higher risk of CVD. Some experts consider the ratio of total cholesterol to HDL the best indicator of CVD risk.
• Lowering blood cholesterol levels reduces heart attack risk and helps to clean out diseased arteries.
• Triglyceride: This is not cholesterol but another form of fat that increases the risk of heart disease. A desirable level ranges from below 150 to 200 mg/dl. Weight loss, regular exercise, and dietary changes are the best ways to reduce triglyceride levels.
• Elevated triglyceride levels, especially in combination with low HDL levels, obesity, and/or diabetes, are a reliable predictor of CVD.

4. Physical inactivity

Physical inactivity is a major risk factor for CVD.

• Exercise lowers risk by helping decrease blood pressure and increase HDL levels.
• Exercise maintains desirable weight and prevents or controls diabetes. A minimum of 20 minutes of moderate physical activity is recommended, three or more times a week.

5. Body weight

Body weight of more than 30% over recommended weight is called obesity and is a known risk factor for CVD.

• Excess weight contributes to high cholesterol levels, high blood pressure, and increases the strain on the heart.
• The distribution of fat is also an indicator of CVD. Fat collected in the upper body is more dangerous than that collected around the hips.

6. Diabetes

Diabetes is a risk factor partially because it increases cholesterol levels in the blood.

7. Psychological and social factors

Psychological and social factors can increase risk for CVD.

• Excessive stress is a risk factor because the stress response puts a strain on the heart and blood vessels.
• Hostility, cynicism, and anger increase the risk for heart disease.
• Suppressing psychological distress, instead of sharing it with others, may have negative physical as well as psychological effects.
• Depression, anxiety, and social isolation are also risk factors of CVD.
• Low socioeconomic status and low educational attainment also increase CVD risks.
Uncontrollable Risk Factors

These are risk factors that cannot be changed, including:

1. **Heredit**
   CVD has a genetic component. A person is at greater risk if a parent had heart or blood vessel disease. High cholesterol levels, blood-clotting problems, diabetes, and obesity also have genetic links.

2. **Age**
   The risk of heart attack increases after age 65.

3. **Gender**
   Men have a higher risk for CVD than do women, especially earlier in life. By age 75, the gender gap nearly disappears.

4. **Ethnicity**
   African Americans (men in particular) have a greater risk for hypertension; many Hispanic Americans have greater risks of high blood pressure and angina. Asian Americans have had lower rates of CVD than white Americans, but their cholesterol levels appear to be rising. Blood cholesterol levels are equally high among Native Americans.
Seven Major Forms of CVD

1. Hypertension
Hypertension is also called a “silent killer” because it can appear without symptoms and can cause major damage before it is ever detected.

- In 90% of people with high blood pressure, the cause is unknown (this is called primary hypertension).
- Hypertension occurs in about 1 in 4 adult Americans. Approximately one-third of Americans with hypertension have it under control.
- Mild hypertension can be lowered with lifestyle changes, while severe hypertension usually requires treatment with medications, in addition to lifestyle changes.

2. Atherosclerosis
- This is a slow, progressive process that may begin in childhood. Arteries become narrowed by deposits of fat, cholesterol, and other substances; the resulting plaques accumulate on arterial walls.
- Arteries become less elastic, usually because of plaque, restricting blood flow and making the artery vulnerable to blockage by blood clots or rupture.
- Platelets also get stuck on plaque, increasing the chances of clot forming.
- When a thrombus blocks an artery, it can deprive a major organ of required blood and oxygen, leading to heart attack (from coronary thrombosis) or stroke (from cerebral thrombosis).

3. Myocardial Infarction (MI)
This usually occurs in the presence of coronary thrombosis, when a vessel delivering blood to the heart muscle is blocked. It occurs in about 1.1 million Americans annually. A person having a heart attack should be transported to an emergency room as quickly as possible. Most people who die from a heart attack die within 2 hours of the first symptoms.

4. Angina pectoris
Angina pectoris is chest pain that occurs when the heart does not get all the oxygen it requires. Angina may also occur as shoulder, neck, arm, hand, or back pain; it is a warning that the load on the heart should be reduced.

5. Arrhythmias
Arrhythmias result from a disruption of the electrical system that regulate the heartbeat, and can lead to sudden death. Medications or a pacemaker can often restore a normal heart rhythm.
6. Congestive Heart Failure (CHF)
This occurs when the heart cannot maintain its regular pumping rate and force. Fluid accumulates in the lungs, and interferes with breathing. This condition is called pulmonary edema.

7. Heart Disease in Children
This occurs as a result of congenital malformations or rheumatic fever.

Common types:
- Ventricular-Septal defects or holes between the ventricles and septum.
- Atria-Septal defects or holes between the atria and septum.
- Diagnosis of childhood heart disease is often made by the health care provider listening to the distinctive heart sounds produced.
- Coarctation of the aorta: This is a congenital narrowing of the aorta, which may lead to heart failure unless surgically corrected.
- Rheumatic heart disease can follow certain types of untreated streptococcal infections that can cause damage to heart muscle valves and inflammation of the lining around the heart.

Diagnosing Cardiovascular Diseases

- Stress tests use electrocardiograms (EKG) and are taken while the patient is exercising to record the electrical activity of the heart and show abnormalities.
- Magnetic resonance imaging (MRI) can provide a view of the heart.
- Arteriography involves inserting a catheter through major arteries into the heart; inject a dye through the catheter to determine the presence of obstructions in targeted arteries.

Common Treatments and Management of Heart Problems

- A low-fat diet, regular exercise, and smoking cessation are recommended lifestyle changes.
- Taking aspirin daily may lower the risk of heart attack because aspirin prevents clotting. Too much aspirin may also cause gastrointestinal irritation or ulcers.
- Balloon angioplasty uses a catheter with a balloon tip which is inflated at the area of blockage to flatten the fatty plaque and widen the opening. It is currently the most common surgical procedure for treating heart disease; however, repeat clogging is common, and variations on the technique are being tried. Stents are now being used to hold compressed plaques in place.
- Coronary artery bypass surgery requires a healthy vein from one of the patient’s legs to reconnect the coronary artery around the occlusion.
- Congestive heart failure can be controlled by reducing load on the heart, eliminating excess fluid, restricting salt. Giving digitalis or other drugs to increase the strength of pumping action, diuretics to eliminate excess salt and water, and vasodilators to expand blood vessels and decrease blood pressure are other ways of managing heart disease.
Statistics

Coronary heart disease is the No. 1 cause of death in the United States. Stroke is the No. 3 cause of death in the United States and a leading cause of serious disability. That's why it's so important to reduce your risk factors, know the warning signs, and know how to respond quickly and properly if warning signs occur.

Heart Attack Warning Signs

Some heart attacks are sudden and intense where no one doubts what's happening. But most heart attacks start slowly with mild pain or discomfort. Often people affected aren't sure what's wrong and wait too long before getting help. Here are signs that can mean a heart attack is happening:

- **Chest discomfort.** Most heart attacks involve discomfort in the center of the chest that lasts more than a few minutes or that goes away and comes back. It can feel like uncomfortable pressure, squeezing, fullness, or pain.
- **Discomfort in other areas of the upper body.** Symptoms can include pain or discomfort in one or both arms, the back, neck, jaw, or stomach.
- **Shortness of breath** with or without chest discomfort.
- **Other signs** may include breaking out in a cold sweat, nausea, or lightheadedness.

Note: Women's most common heart attack symptom is chest pain or discomfort. But women are somewhat more likely than men to experience some of the other common symptoms, particularly shortness of breath, nausea/vomiting, and back or jaw pain.

Learn the signs, but remember this: Even if you're not sure it's a heart attack, have it checked out (tell a doctor about your symptoms). Minutes matter! Fast action can save lives — maybe your own. Don't wait more than five minutes to call 9-1-1.

Calling 9-1-1 is almost always the fastest way to get lifesaving treatment. Emergency medical services (EMS) staff can begin treatment when they arrive — up to an hour sooner than if someone gets to the hospital by car. EMS staffs are also trained to revive someone whose heart has stopped. Patients with chest pain who arrive by ambulance usually receive faster treatment at the hospital, too. It is best to call EMS for rapid transport to the emergency room.

If you can't access the emergency medical services (EMS), have someone drive you to the hospital right away. If you're the one having symptoms, don't drive yourself unless you have absolutely no other option.

Cardiac Arrest Strikes Immediately and Without Warning

Here are the signs:

- Sudden loss of responsiveness (no response to tapping on shoulders).
- No normal breathing (the victim does not take a normal breath when you tilt the head up and check for at least five seconds).

If these signs of cardiac arrest are present, tell someone to call 9-1-1 and get an Automated External Defibrillator (AED) (if one is available) and you begin CPR immediately.

If you are alone with an adult who has these signs of cardiac arrest, call 9-1-1 and get an AED (if one is available) before you begin CPR.

Use an AED as soon as it arrives.
A stroke occurs when the blood vessels that supply nourishment to the brain are blocked or burst. A stroke is usually named based on its cause.

- Thrombotic stroke occurs when a blood clot (thrombus) forms in one of the arteries in the brain. The risk is higher in those with hypertension.
- Embolic stroke occurs when a wandering blood clot or embolus, is carried in the bloodstream and becomes lodged in one of the arteries in the brain.
- Cerebral hemorrhage occurs if a blood vessel in the brain bursts, spilling blood into surrounding tissues. Cells normally nourished by that artery are deprived of blood and cannot function. Bleeding can also occur as the result of a head injury or the bursting of an aneurysm.
- Most stroke survivors suffer lasting disabilities that vary and depend on the part of the brain affected. The combination of atherosclerosis and hypertension puts people at increased risk for strokes. About 600,000 Americans have strokes yearly, and about one-third of those die.

### Transient Ischemic Attacks (TIA)

Transient Ischemic Attacks (TIA) is a small stroke that may occur prior to a full stroke. It may produce similar symptoms that last only briefly. A person who has had or is having a stroke should be rushed to a hospital.

### Diagnosis, Treatments, Outcomes of Strokes and TIAs

A computed tomography (CT) scan can be used to assess brain damage and determine the type of stroke.

- If a clot is detected, the patient can be given the same drugs used to treat coronary artery blockages.
- People who have had TIAs are at high risk for stroke.
- A rehabilitation program following a stroke includes physical therapy to strengthen muscles and improve body coordination, speech and language therapy; Occupational therapy used to improve hand-eye coordination and everyday skills is equally helpful.
- Damaged or destroyed brain tissue cannot regenerate, but the brain cells can form new pathways, allowing other parts of the brain to take over some of the functions of the damaged parts.

### Warning Signs of Stroke:

- Sudden numbness or weakness of the face, arm, or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden, severe headache with no known cause

If you or someone with you has one or more of these signs, don't delay! Immediately call 9-1-1 or the emergency medical services (EMS) number so an ambulance (ideally with advanced life support) can be sent for you. Also, check the time so you'll know when the first symptoms appeared. It's very important to take immediate action. If given within three hours of the start of symptoms, a clot-busting drug called tissue plasminogen activator (TPA) can reduce long-term disability for the most common type of stroke. TPA is the only FDA-approved medication for the treatment of stroke within three hours of stroke symptom onset.
Prevention of Cardiovascular Disease and Stroke

1. A heart-healthy diet reduces CVD risk, so learn about eating a balanced diet.
   - Total fat consumption should not be more than 30% of total calories.
   - Saturated fats should represent no more than one-third of fat calories.
   - Although the connection between dietary and blood cholesterol is not clear, it is important to limit intake of animal products that are high in cholesterol as well as in fat.
   - Increased intake of dietary fiber helps prevent cholesterol production and may interfere with the absorption of dietary fat, among other benefits.
   - The moderate use of alcohol increases HDL cholesterol, but alcohol intake is not recommended in reducing risk for heart disease.
   - It should be noted that excessive consumption of salt can raise blood pressure and thereby increase risk of CVD.
   - The study called “Dietary Approaches to Stop Hypertension,” or DASH found that a diet low in fat and high in fruits, vegetables, and low fat dairy products reduces blood pressure.
   - Other medical conditions that may affect CVD risk need to be controlled and managed.

2. A moderate amount of physical activity significantly reduces the risk of CVD. Individuals should exercise for three or more times a week, for 20 or more minutes per session.

3. Avoid smoking and use of other forms of tobacco; avoid exposure to environmental tobacco smoke (ETS) or smoke released by smokers.

4. Routinely monitor blood pressure at least once a year, or as advised by a health care provider.

5. Monitor blood cholesterol level annually, and manage or treat cholesterol related problems as advised by a health care provider.

Interpreting Blood Cholesterol Levels:

- Below 200 mg/dl means a relatively low risk of heart attack provided that no other risk factors are present.
- 200 and 239 mg/dl indicate a higher level of CVD risk.
- 240 mg/dl or more indicates a substantially higher than average risk of CVD.
- HDL levels below 35 mg/dl, no matter the total cholesterol level, may indicate a higher risk of CVD.
- LDL level between 130-159 indicates a low risk for heart disease.
- **Stress and Anger:** Develop effective ways to handle stress and anger, as this reduces the risk for CVD.
1. Identify the Extent of Heart Disease

Ask for a show of hands from participants with family members or close friends who have had a heart attack. Ask everyone to look around. Then have participants raise their hands if any members of the family have other forms of cardiovascular disease, such as angina, hypertension, stroke, and congestive heart failure. Ask the participants to look around again. Usually 50–70% will have hands raised. Ask for reactions.

Consider asking participants if they have relatives or friends who would be willing to share their experiences. A panel may be developed of individuals of different ages and backgrounds. Include persons who have not had cardiovascular problems but have relatives or friends who have suffered from it.

2. Hands-On

Teach each participant how to take blood pressure if time permits and the equipment is available. Otherwise, someone from the local hospital or health department should take each participant's blood pressure while the rest of the group observes. This should take about 6 minutes per participant. It should be accompanied by a description of the procedure and an explanation of the underlying mechanism. The physical science department at a local university, community college or high school can help you produce a fascinating presentation of medical physics (circulatory and respiratory mechanics).

3. Are you at Risk for Heart Disease?

Ask Participants to take the "Are You at Risk for CVD?" assessment provided in your handout. Have them plan a heart-healthy behavior change based on their assessment score. Encourage participants to compare their risks with those of other family members.

4. Ethnic/Cultural Differences in Incidence of Heart Disease

Ask participants to compare and contrast the incidence of cardiovascular disease among different ethnic groups in the United States. Discuss the findings in your class or group.

5. Compile Heart-Healthy Choices

Ask participants to compile a list of restaurants with heart-healthy choices in their community. How does the list compare to the number of restaurants with less healthy menus? What are the cost differences? Discuss the findings in your class or group.
HEALTHY PEOPLE 2020 SUMMARY OF OBJECTIVES FOR HEART DISEASE AND STROKE (HDS)

HDS-1: (Developmental) Increase overall cardiovascular health in the U.S. population. 
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-2: Reduce coronary heart disease deaths. 
Target: 100.8 deaths per 100,000 populations. 
Baseline: 126.0 coronary heart disease deaths per 100,000 population occurred in 2007 (age adjusted to the year 2000 standard population). 
Target setting method: Projection (20 percent improvement). 
Data source: National Vital Statistics System-Mortality (NVSS-M), CDC, NCHS.

HDS-3: Reduce stroke deaths. 
Target: 33.8 deaths per 100,000 populations. 
Baseline: 42.2 stroke deaths per 100,000 population occurred in 2007 (age adjusted to the year 2000 standard population). 
Target setting method: Projection (20 percent improvement). 
Data source: National Vital Statistics System-Mortality (NVSS-M), CDC, NCHS.

HDS-4: Increase the proportion of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was normal or high. 
Target: 92.6 percent. 
Baseline: 90.6 percent of adults aged 18 years and older had their blood pressure measured within the preceding 2 years and could state whether it was normal or high in 2008 (age adjusted to the year 2000 standard population). 
Target setting method: 2 percentage point improvement. 
Data source: National Health Interview Survey (NHIS), CDC, NCHS.

HDS-5: Reduce the proportion of persons in the population with hypertension. 

HDS-5.1 Reduce the proportion of adults with hypertension. 
Target: 26.9 percent. 
Baseline: 29.9 percent of adults aged 18 years and older had high blood pressure/hypertension in 2005-08 (age adjusted to the year 2000 standard population). 
Target setting method: 10 percent improvement. 
Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-5.2 Reduce the proportion of children and adolescents with hypertension. 
Target: 3.2 percent. 
Baseline: 3.5 percent of children and adolescents aged 8 to 17 years had high blood pressure/hypertension in 2005-08. 
Target setting method: 10 percent improvement. 
Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.
HDS-6: Increase the proportion of adults who have had their blood cholesterol checked within the preceding 5 years.  
Target: 82.1 percent.  
Baseline: 74.6 percent of adults aged 18 years and older had their blood cholesterol checked within the preceding 5 years in 2008 (age adjusted to the year 2000 standard population).  
Target setting method: 10 percent improvement.  
Data source: National Health Interview Survey (NHIS), CDC, NCHS.

HDS-7: Reduce the proportion of adults with high total blood cholesterol levels.  
Target: 13.5 percent.  
Baseline: 15.0 percent of adults aged 20 years and older had total blood cholesterol levels of 240 mg/dL or greater in 2005-08 (age adjusted to the year 2000 standard population).  
Target setting method: 10 percent improvement.  
Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-8: Reduce the mean total blood cholesterol levels among adults.  
Target: 177.9 mg/dl (mean).  
Baseline: 197.7 mg/dl was the mean total blood cholesterol level for adults aged 20 years and older in 2005-08 (age adjusted to the year 2000 standard population).  
Target setting method: 10 percent improvement.  
Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-9: (Developmental) Increase the proportion of adults with prehypertension who meet the recommended guidelines.

HDS-9.1 (Developmental) Body mass index (BMI).  
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-9.2 (Developmental) Saturated fat consumption.  
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-9.3 (Developmental) Sodium intake.  
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-10: (Developmental) Increase the proportion of adults with hypertension who meet the recommended guidelines.

HDS-10.1 (Developmental) BMI.  
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-10.2 (Developmental) Saturated fat consumption.  
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-10.3 (Developmental) Sodium intake.  
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-10.4 (Developmental) Physical activity.  
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-10.5 (Developmental) Moderate alcohol consumption.  
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.
HDS-11: Increase the proportion of adults with hypertension who are taking the prescribed medications to lower their blood pressure.
Target: 77.4 percent.
Baseline: 70.4 percent of adults aged 18 years and older with high blood pressure/hypertension were taking the prescribed medications to lower their blood pressure in 2005-08 (age adjusted to the year 2000 standard population).
Target setting method: 10 percent improvement.
Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-12: Increase the proportion of adults with hypertension whose blood pressure is under control.
Target: 61.2 percent.
Baseline: 43.7 percent of adults aged 18 years and older with high blood pressure/hypertension had it under control in 2005-08 (age adjusted to the year 2000 standard population).
Target setting method: Projection (40 percent improvement).
Data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-13: (Developmental) Increase the proportion of adults with elevated LDL cholesterol who have been advised by a health care provider regarding cholesterol lowering management including lifestyle changes and, if indicated, medication.

Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-13.2 (Developmental) Physical activity.
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-13.3 (Developmental) Weight control.
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-13.4 (Developmental) Prescribed drug therapy.
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-14: (Developmental) Increase the proportion of adults with elevated LDL-cholesterol who adhere to the prescribed LDL-cholesterol lowering management lifestyle changes and, if indicated, medication.

HDS-14.1 (Developmental) Cholesterol-lowering diet.
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-14.2 (Developmental) Physical activity.
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-14.3 (Developmental) Weight control.
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-14.4 (Developmental) Prescribed drug therapy.
Potential data source: National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

HDS-15: (Developmental) Increase aspirin use as recommended among adults with no history of cardiovascular disease.

HDS- 15.1 (Developmental) Women aged 55 to 79 years.
Potential data source: National Ambulatory Medical Care Survey (NAMCS)/National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

HDS- 15.2 (Developmental) Men aged 45 to 79 years.
Potential data source: National Ambulatory Medical Care Survey (NAMCS)/National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.
HDS-16: Increase the proportion of adults aged 20 years and older who are aware of, and respond to, early warning symptoms and signs of a heart attack.

HDS-16.1 Increase the proportion of adults aged 20 years and older who are aware of the early warning symptoms and signs of a heart attack and the importance of accessing rapid emergency care by calling 9-1-1 or another emergency number. 
Target: 43.1 percent.
Baseline: 39.2 percent of adults aged 20 years and older were aware of the early warning symptoms and signs of a heart attack and the importance of accessing rapid emergency care by calling 9-1-1 or another emergency number in 2008 (age adjusted to the year 2000 standard population).
Target setting method: 10 percent improvement.
Data source: National Health Interview Survey (NHIS), CDC, NCHS.

HDS-16.2 Increase the proportion of adults aged 20 years and older who are aware of the early warning symptoms and signs of a heart attack.
Target: 46.2 percent.
Baseline: 42.0 percent of adults aged 20 years and older were aware of the early warning symptoms and signs of a heart attack in 2008 (age adjusted to the year 2000 standard population).
Target setting method: 10 percent improvement.
Data source: National Health Interview Survey (NHIS), CDC, NCHS.

HDS-16.3 Increase the proportion of adults aged 20 years and older who are aware of the importance of accessing rapid emergency care by calling 9-1-1 or another emergency number.
Target: 94.9 percent.
Baseline: 92.9 percent of adults aged 20 years and older were aware of the importance of accessing rapid emergency care by calling 9-1-1 or another emergency number in 2008 (age adjusted to the year 2000 standard population).
Target setting method: 2 percentage point improvement.
Data source: National Health Interview Survey (NHIS), CDC, NCHS.

HDS-17: (Developmental) Increase the proportion of adults aged 20 years and older who are aware of and respond to early warning symptoms and signs of a stroke.

HDS- 17.1 (Developmental) Increase the proportion of adults who are aware of the early warning symptoms and signs of a stroke and the importance of accessing rapid emergency care by calling 9-1-1 or another emergency number.
Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

HDS-17.2 (Developmental) Increase the proportion of adults aged 20 years and older who are aware of the early warning symptoms and signs of a stroke.
Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

HDS-17.3 (Developmental) Increase the proportion of adults aged 20 years and older who are aware of the importance of accessing rapid emergency care by calling 9-1-1 or another emergency number.
Potential data source: National Health Interview Survey (NHIS), CDC, NCHS.

HDS-18: (Developmental) Increase the proportion of out-of-hospital cardiac arrests in which appropriate bystander and emergency medical services (EMS) were administered.
Potential data source: National Emergency Medical Services Information System (NEMSIS), National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).
**HDS-19:** Increase the proportion of eligible patients with heart attacks or strokes who receive timely artery-opening therapy as specified by current guidelines.

**HDS-19.1** Fibrinolytic therapy within 30 minutes of hospital arrival for patients with heart attacks.
*Target:* 75.1 percent.
*Baseline:* 68.3 percent of eligible heart attack patients received fibrinolytics within 30 minutes of hospital arrival in 2009.
*Target setting method:* 10 percent improvement.
*Data source:* Acute Coronary Treatment and Intervention Outcomes Network Registry-Get with the Guidelines (ACTION Registry-GWTG), American College of Cardiology Foundation and American Heart Association.

**HDS-19.2** Percutaneous intervention (PCI) within 90 minutes of hospital arrival for patients with heart attacks.
*Target:* 97.5 percent.
*Baseline:* 88.6 percent of eligible heart attack patients received percutaneous intervention within 90 minutes of hospital arrival in 2009.
*Target setting method:* 10 percent improvement.
*Data source:* Acute Coronary Treatment and Intervention Outcomes Network Registry-Get with the Guidelines (ACTION Registry-GWTG), American College of Cardiology Foundation and American Heart Association.

**HDS-19.3** (Developmental) Acute reperfusion therapy within 3 hours from symptom onset for patients with strokes.

**HDS-20:** (Developmental) Increase the proportion of adults with coronary heart disease or stroke who have their low-density lipoprotein (LDL) cholesterol level at or below recommended levels.

**HDS-20.1** (Developmental) Increase the proportion of adults with coronary heart disease who have their low-density lipoprotein (LDL) cholesterol at or below recommended levels.
*Potential data source:* National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

**HDS-20.2** (Developmental) Increase the proportion of adults who have had a stroke who have their low-density lipoprotein (LDL) cholesterol at or below recommended levels.
*Potential data source:* National Health and Nutrition Examination Survey (NHANES), CDC, NCHS.

**HDS-21:** (Developmental) Increase the proportion of adults with a history of cardiovascular disease who are using aspirin or anti platelet therapy to prevent recurrent cardiovascular events.
*Potential data source:* National Ambulatory Medical Care Survey (NAMCS)/National Hospital Ambulatory Medical Care Survey (NHAMCS), CDC, NCHS.

**HDS-22:** (Developmental) Increase the proportion of adult heart attack survivors who are referred to a cardiac rehabilitation program at discharge.
*Potential data source:* Acute Coronary Treatment and Intervention Outcomes Network Registry-Get with the Guidelines (ACTION Registry-GWTG), American College of Cardiology Foundation and American Heart Association.

**HDS-23:** (Developmental) Increase the proportion of adult stroke survivors who are referred to a stroke rehabilitation program at discharge.
*Potential data source:* Acute Coronary Treatment and Intervention Outcomes Network Registry-Get with the Guidelines Program-Stroke Module (GWTG-Stroke), American Heart Association/American Stroke Association.
**HDS-24**: Reduce hospitalizations of older adults with heart failure as the principal diagnosis.

**HDS-24.1** Adults aged 65 to 74 years.
Target: 8.8 hospitalizations per 1,000 population.
Baseline: 9.8 hospitalizations for heart failure per 1,000 population aged 65 to 74 years occurred in 2007.
Target setting method: 10 percent improvement.
Data source: Chronic Conditions Warehouse (CCW), CMS.

**HDS-24.2** Adults aged 75 to 84 years.
Target: 20.2 hospitalizations per 1,000 population.
Baseline: 22.4 hospitalizations for heart failure per 1,000 population aged 75 to 84 years occurred in 2007.
Target setting method: 10 percent improvement.
Data source: Chronic Conditions Warehouse (CCW), CMS.

**HDS-24.3** Adults aged 85 years and older.
Target: 38.6 hospitalizations per 1,000 population.
Baseline: 42.9 hospitalizations for heart failure per 1,000 population aged 85 years and older occurred in 2007.
Target setting method: 10 percent improvement.
Data source: Chronic Conditions Warehouse (CCW), CMS.
For additional current information, films, and teaching aids, contact (local chapters where appropriate).

**American Heart Association**

**American Red Cross**

**National Heart, Lung, and Blood Institute**
Department of Health and Human Services
Building 31, Room 4A-21, 9000 Rockville Pike, Bethesda, MD 20205
301-496-4236

**Health Departments** (hypertension, cholesterol, etc. screening)
– check at your local county health department.

**Hospitals**
Note: Many hospitals and businesses are instituting cardiovascular disease prevention programs.
Ask about these possibilities from the resources from your local hospital or medical center.

**Internet Resources**

**Agency for Health Care Policy and Research** - [www.ahcpr.gov/consumer](http://www.ahcpr.gov/consumer)
AHCPR’s site links to information on publications relevant to heart disease and stroke such as What You Should Know About Stroke Prevention, Managing Unstable Angina, Living with Heart Disease: Is It Heart Failure? and Recovering from Heart Problems Through Cardiac Rehabilitation.

**American Association of Cardiovascular and Pulmonary Rehabilitation** – [www.aacvpr.org](http://www.aacvpr.org)
This site provides information about this professional organization and links to both cardiovascular and pulmonary related sites.

**American College of Cardiology** – [www.acc.org/login/login.taf](http://www.acc.org/login/login.taf)
This professional organization provides information about its conferences, journal articles, and technical information on this site.

**American Heart Association** – [www.amhrt.org](http://www.amhrt.org)
Provides information on hundreds of topics relating to the prevention and control of cardiovascular disease.

**Cardiology Compass** – [www.cardiologycompass.com](http://www.cardiologycompass.com)
An index to cardiovascular information on the Internet.

**Franklin Institute Science Museum/The Heart: An On-Line Exploration** – [www.fi.edu/biosci/heart.html](http://www.fi.edu/biosci/heart.html)
This online museum exhibit contains information about the structure and function of the heart and describes how to monitor and maintain heart health.

**Heart Info-Heart Information Network** – [www.heartinfo.org](http://www.heartinfo.org)
Provides information for patients with heart disease and others interested in learning how to identify and reduce their risk factors.
Provides information on a variety of topics relating to cardiovascular health and disease, including cholesterol, smoking, obesity, and hypertension.

National Stroke Association – www.stroke.org
Provides information and referrals for stroke victims and their families and offers a stroke risk assessment.

U.S. Food and Drug Administration Center for Food Safety and Applied Nutrition – www.fda.gov/Food/
This site offers information about keeping cholesterol under control, using the new food label to prevent heart disease, and facts about women and heart disease. It also provides links to other related agencies.