



# Heart Health

# About Cardiovascular Disease

- Cardiovascular diseases are disorders of the heart and blood vessels
- Cardiovascular disease (CVD) can refer to a number of conditions including coronary heart disease, heart attack, stroke, heart failure, arrhythmia, and more
- Cardiovascular disease is the leading cause of death worldwide—killing an estimated 17.9 million people annually



*Image Source: WebMD (www.webmd.com)*

# Atherosclerosis

- Many CVDs are related to a condition called *atherosclerosis*
- Atherosclerosis develops when plaque builds up in the walls of the arteries
- This buildup narrows the arteries, making it harder for blood to flow through
- If a blood clot forms, it can block the blood flow, and this can cause a heart attack or stroke

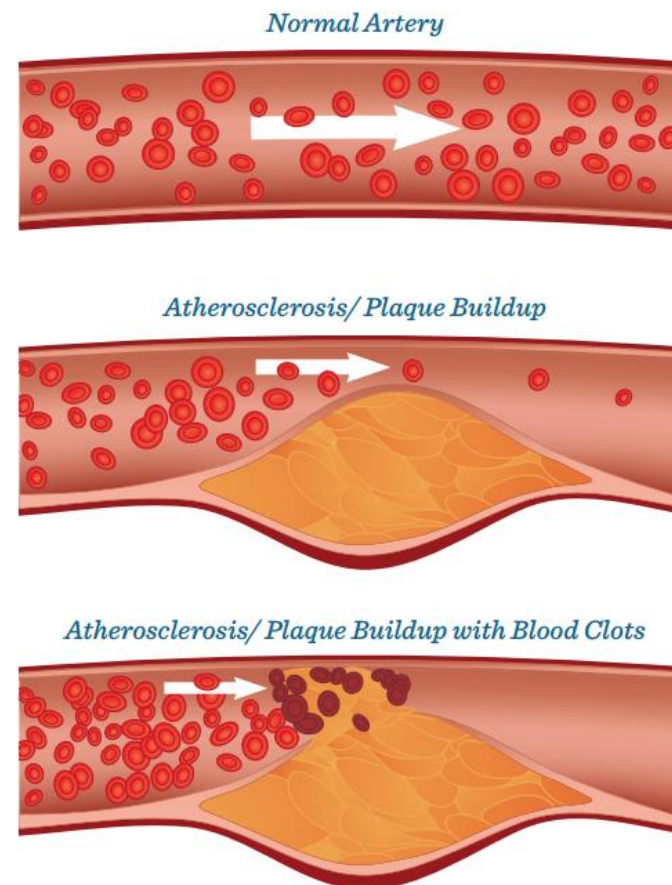
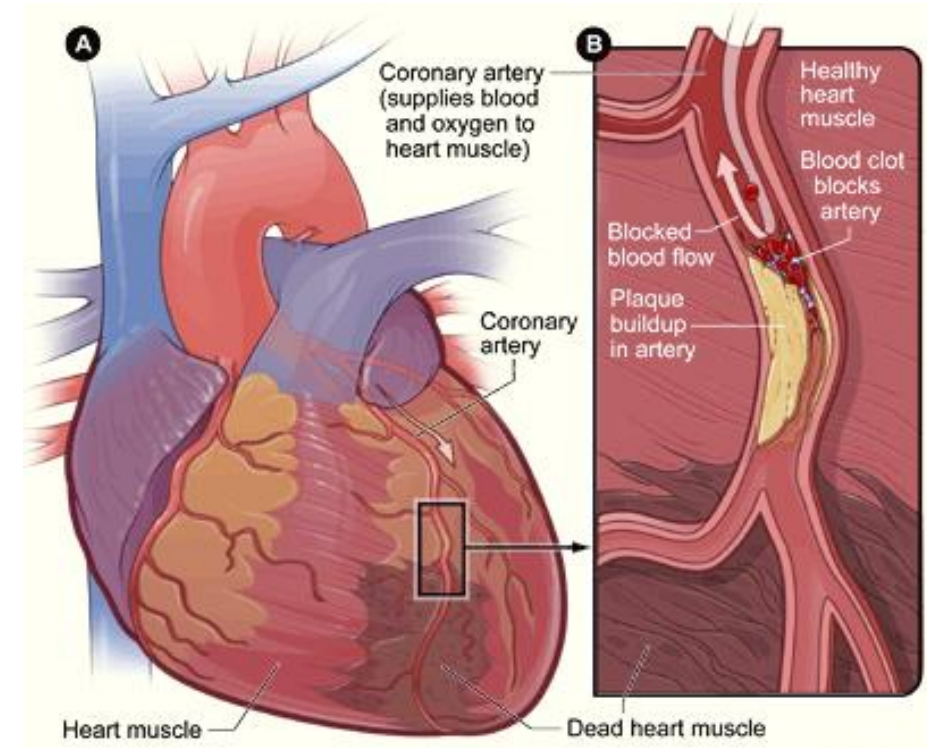


Image Source: American Heart Association ([www.heart.org](http://www.heart.org))

# Heart Attack

- A heart attack occurs when the blood flow that brings vital oxygen to the heart muscle is severely reduced or cut off completely
- When plaque within a heart artery breaks, a blood clot forms around the plaque; this blood clot can block the blood flow through the artery to the heart muscle
- *Ischemia* results when the heart muscle is starved for oxygen and nutrients
- When damage or death of part of the heart muscle occurs as a result of ischemia, it's called a heart attack or *myocardial infarction* (MI)



# Heart Attack Warning Signs

*Don't wait to get help if you are experiencing heart attack warning signs. Some heart attacks are sudden and intense, but most start slowly, with mild pain or discomfort. Pay attention to your body and call 911 if you experience:*

- **Chest discomfort** — Most heart attacks involve discomfort in the center of the chest that lasts more than a few minutes – or it may go away and then return. 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** — This can occur with or without chest discomfort.
- **Other signs** — Other possible signs include breaking out in a cold sweat, nausea, or lightheadedness.

## **NOTE: Symptoms vary between men and women!**

- As with men, 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.

# Stroke

- An ischemic stroke (the most common type of stroke) occurs when a blood vessel that feeds the brain gets blocked, usually from a blood clot
- When the blood supply to a part of the brain is cut off, some brain cells will begin to die – this can result in the loss of functions controlled by that part of the brain, such as walking or talking
- A hemorrhagic stroke occurs when a blood vessel within the brain bursts – this is most often caused by uncontrolled hypertension (high blood pressure)
- Some effects of stroke are permanent if too many brain cells die after being starved of oxygen, as these cells are never replaced

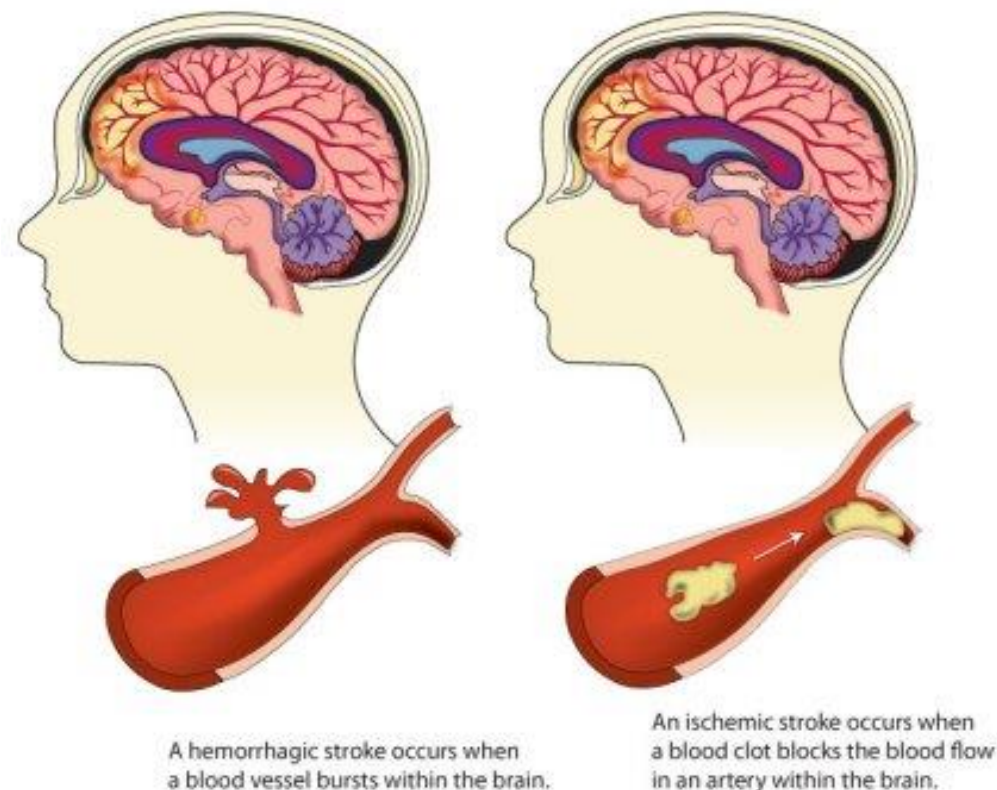


Image Source: Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov))

# Stroke Warning Signs

*Time is important, so don't delay! If someone shows any symptoms of stroke, even if the symptoms go away, call 911 and say, "I think this is a stroke" to help get the person to the hospital immediately.*

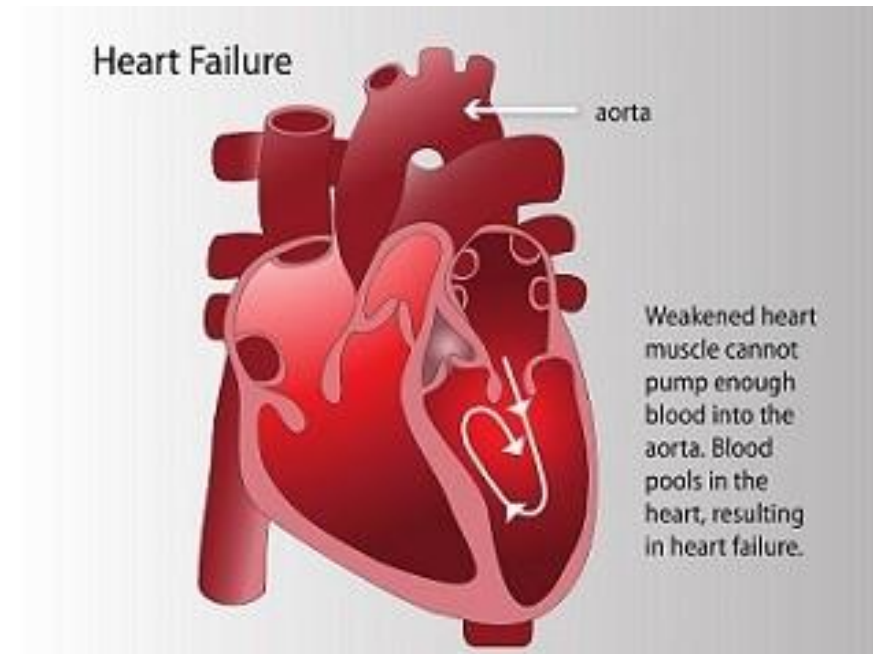
- The three most common signs of stroke are **face drooping**, **arm weakness**, and **speech difficulty**

Other symptoms to watch for include:

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

# Heart Failure

- Heart failure is a chronic, progressive condition in which the heart muscle is unable to pump enough blood to meet the body's needs for blood and oxygen—in other words, the heart can't keep up with its workload
- Your body depends on the heart's pumping action to deliver oxygen- and nutrient-rich blood to the body's cells
- With heart failure, the weakened heart can't supply the cells with enough blood, resulting in fatigue, shortness of breath, possible chronic cough, and making everyday tasks such as walking/climbing stairs very difficult
- Heart failure is a serious condition, and usually there's no cure; however, many people with heart failure lead a full, enjoyable life when their condition is managed with medication and healthy lifestyle changes

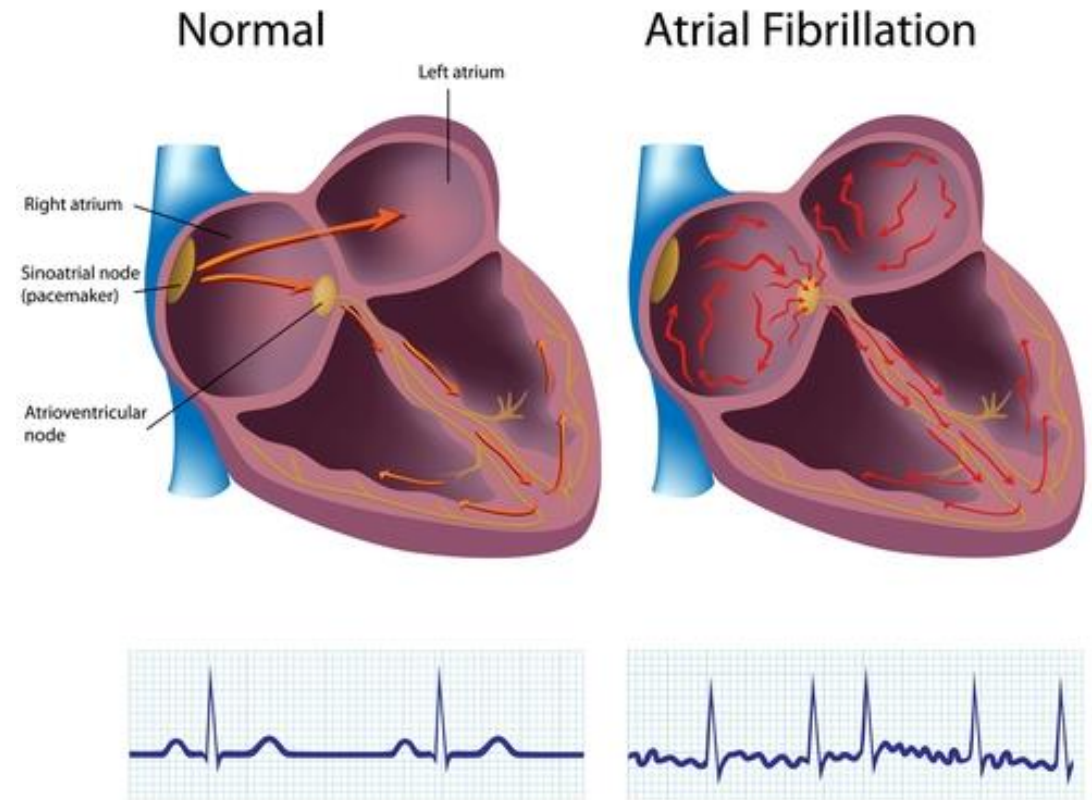


*Image Source: Centers for Disease Control and Prevention (www.cdc.gov)*



# Arrhythmia

- *Arrhythmia* refers to an abnormal heart rhythm
- Some arrhythmias are so brief (for example, a temporary pause or premature beat) that the overall heart rate or rhythm isn't greatly affected; however, if arrhythmias last longer, they may cause the heart rate to be too slow, too fast, or erratic and cause the heart to pump less effectively
- When the heart doesn't beat properly, it can't pump blood effectively – when the heart doesn't pump blood effectively, the lungs, brain, and all other organs can't work properly and may shut down or be damaged

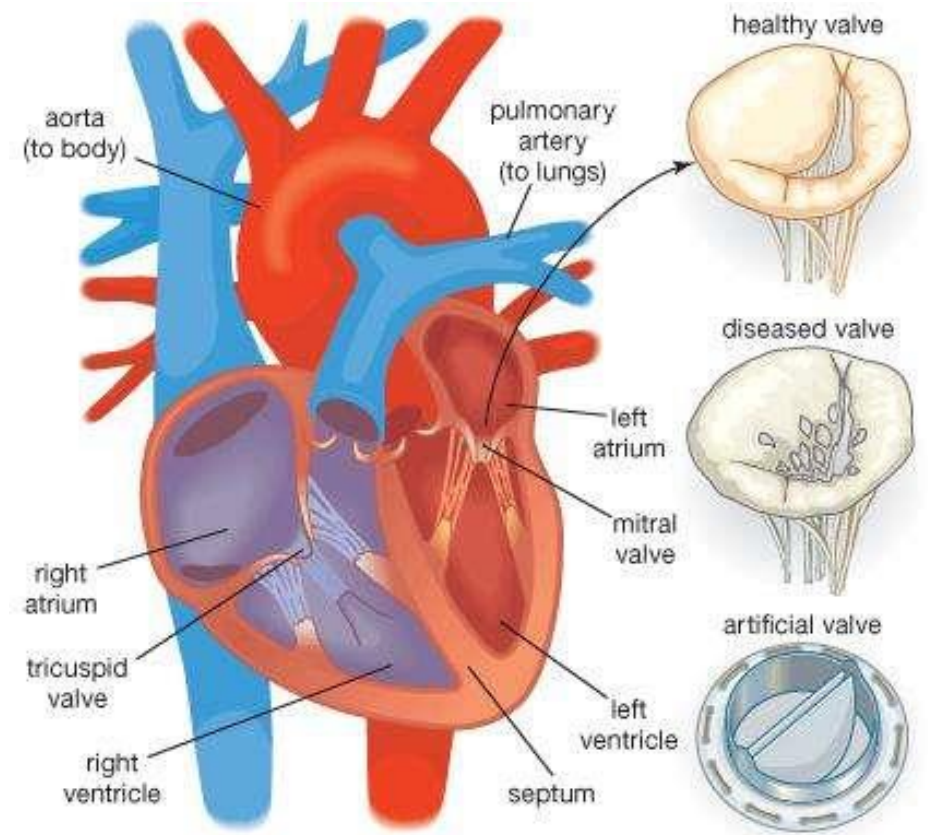


# Arrhythmia Symptoms

- There are a variety of arrhythmias, and they can produce a broad range of symptoms and results
- An arrhythmia can be silent, meaning you don't notice any symptoms
- A doctor can find an irregular heartbeat during a physical exam by taking your pulse or through an electrocardiogram (ECG or EKG)
- When arrhythmias last long enough to affect how well the heart works, more serious symptoms may develop:
  - **Fatigue or weakness**
  - **Dizziness or lightheadedness**
  - **Fainting or near-fainting spells**
  - **Rapid heartbeat or pounding in the chest**
  - **Shortness of breath and anxiety**
  - **Chest pain or pressure**
  - **In extreme cases, collapse and sudden cardiac arrest**

# Heart Valve Problems and Disease

- The human heart has four valves – tricuspid, pulmonary, mitral, and aortic – that work together with the rest of the circulatory system to deliver blood, oxygen, and nutrients to all tissue
- Properly working valves are properly formed and flexible, should open all the way so the right amount of blood can pass through, and should close tightly so no blood leaks back into the chamber
- When heart valves don't open enough to allow the blood to flow through as it should, a condition called **stenosis** results
- When the heart valves don't close properly and thus allow blood to leak through, it's called **regurgitation**
- If the valve leaflets bulge or prolapse back into the upper chamber, it's called **prolapse**



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Image Source: Encyclopædia Britannica ([www.britannica.com](http://www.britannica.com))

# Heart Valve Problems and Disease

- A valve problem can be severe with no symptoms; however, a valve problem can also be insignificant in terms of leakage, but problematic because of uncomfortable symptoms
- Some physical signs of heart valve disease can include:
  - **Chest pain or palpitations (rapid rhythms or skips)**
  - **Shortness of breath, difficulty catching your breath, fatigue, weakness, or inability to maintain regular activity level**
  - **Lightheadedness or loss of consciousness**
  - **Swollen ankles, feet, or abdomen**
- Some people suddenly experience very noticeable symptoms, while others may not notice slowly-developing symptoms that may point to a serious valve condition
- For some people, the disease progresses very slowly, and the heart is able to compensate over time so that the symptoms are barely noticeable; however, the risk and damage may still be significant, so education and awareness about the possible causes for a gradual onset of symptoms is important for individuals who may be at risk

# Coronary Heart Disease

- Coronary heart disease is a common term for the buildup of plaque in the heart's arteries that could lead to heart attack
- Coronary heart disease (CHD) is actually a result of coronary artery disease (CAD), in which plaque first grows within the walls of the coronary arteries until the blood flow to the heart's muscle is limited—a condition known as *ischemia*
- Ischemia can be chronic – narrowing of the coronary artery over time and limiting of the blood supply to part of the muscle – or it can be acute – resulting from a sudden rupture of a plaque and formation of a thrombus or blood clot

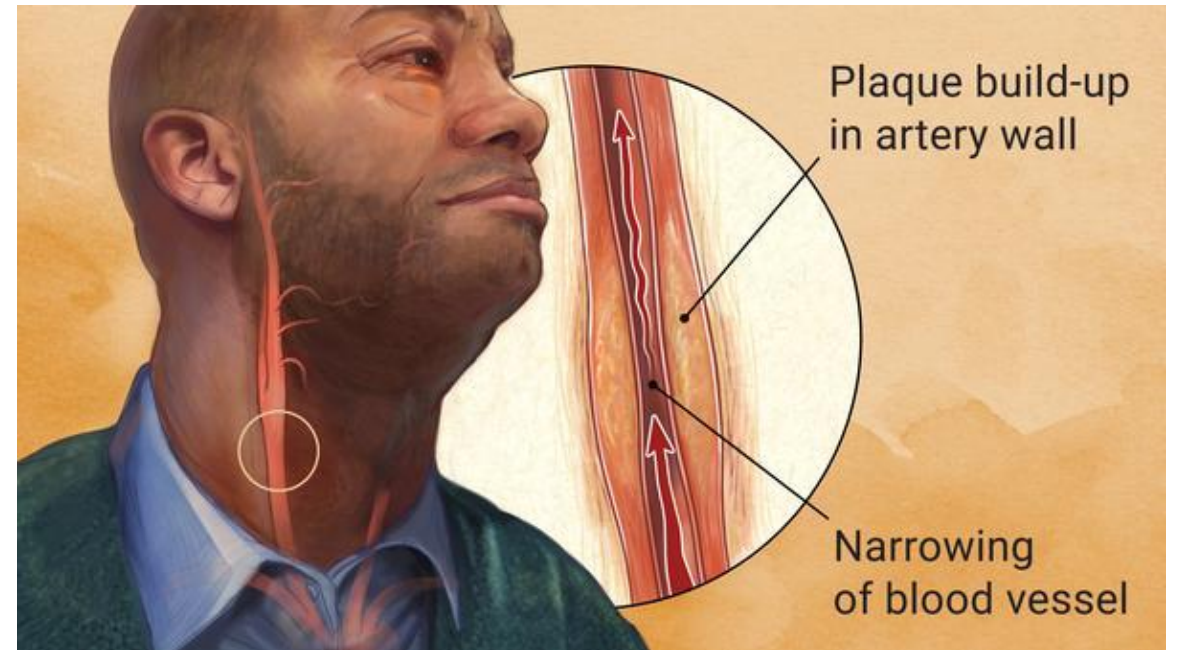


Image Source: WebMD ([www.webmd.com](http://www.webmd.com))

# Coronary Heart Disease Risk Factors

Risk Factors You **CANNOT** Control:

- **Family history** – A family history of early CHD is a risk factor for developing CHD, specifically if a father or brother is diagnosed before age 55, or a mother or sister is diagnosed before age 65
- **Age** – Post-menopausal or age 55+ (for women) and age 45+ (for men)
- **Gender** - Some risk factors may affect CHD risk differently in women than in men (e.g., estrogen provides women some protection against CHD, whereas diabetes raises the risk of CHD more in women than in men)

# Coronary Heart Disease Risk Factors

## Risk Factors You **CAN** Control

- **High LDL cholesterol and triglycerides**
- **Low HDL cholesterol**
- **High blood pressure**
- **Diabetes and prediabetes**
- **Smoking**
- **Obesity and being overweight**
- **Lack of physical activity**
- **Unhealthy diet**
- **Stress**

# Preventing Coronary Heart Disease

- **Eat a heart-healthy diet**

- Consume vegetables, fruits, whole grains, fat-free or low-fat dairy products, fish, lean meats, poultry, eggs, nuts, seeds, soy products, legumes, and vegetable oils (except coconut and palm oils)
- Limit sodium, saturated and trans fats, added sugars, and alcohol
- Your doctor may recommend the heart-healthy Dietary Approaches to Stop Hypertension (DASH) eating plan that has been proven to lower blood pressure and bad LDL cholesterol in the blood.

- **Aim for a healthy weight**

- A healthy weight for adults is typically when your body mass index (BMI) is between 18.5 and 24.9
- The more body fat you have and the more you weigh, the more likely you are to develop coronary heart disease, high blood pressure, type 2 diabetes, breathing problems, and certain cancers
- If you are overweight or obese, try to lose weight – health professionals recommend losing 5 to 10 percent of your initial weight over the course of about 6 months
- A loss of just 3 to 5 percent of your current weight can lower triglycerides and glucose levels in your blood, as well as your risk of developing type 2 diabetes
- Losing more than 3 to 5 percent of your weight can improve blood pressure readings, lower bad LDL cholesterol, and increase good HDL cholesterol



# Preventing Coronary Heart Disease

- **Manage stress in healthy ways**

- Research suggests an emotionally upsetting event can serve as a trigger for a heart attack or chest pain in some people; stress can also contribute to high blood pressure and other cardiovascular risks
- Some of the ways people cope with stress (e.g., drinking alcohol, abusing other substances, smoking, overeating) are not healthy ways to manage stress
- Consider meditating, exercising, speaking with a qualified mental healthcare provider, meeting with a community support group, etc.

- **Regular physical activity**

- Routine physical activity and reduction in sedentary lifestyle can improve physical fitness, lower your risk for type 2 diabetes, and lower many heart disease risk factors such as bad LDL cholesterol levels and increasing good HDL cholesterol levels in the blood, controlling high blood pressure, and helping you lose excess weight
- Everyone should try to engage in moderate-intensity aerobic exercise at least 150 minutes per week, or vigorous aerobic exercise for 75 minutes per week – the more active you are, the more you will benefit; participate in aerobic exercise for at least 10 minutes at a time spread throughout the week
- Talk with your healthcare provider before starting a new exercise plan; ask how much and what kinds of activities are safe for you
- Reduce how long you sit at a given time – people who sit for long periods of time have been found to have higher rates of heart disease, diabetes, and death

# Preventing Coronary Heart Disease

- **Stop smoking**

- If you smoke, quit!
- Smoking can raise your risk for coronary heart disease and heart attack and worsen other coronary heart disease risk factors
- Contact your healthcare provider about programs and products to help you quit smoking
  - Caterpillar health plans cover smoking cessation counseling and prescriptions at 100%—meaning at no cost to employees!
- U.S. residents can call 1-800-QUIT-NOW (1-800-784-8669) for free support and counseling from experienced quitline coaches, mailed self-help materials, and referrals to other resources
- Also avoid secondhand smoke



# Diagnosing Cardiovascular Disease

- Tests to diagnose CVD depend on what condition your doctor thinks you may have
- No matter what type of heart disease you have, your doctor will likely perform a physical exam, ask about your personal and family medical history, perform blood tests, and take a chest x-ray
- Additional testing may include:
  - **Electrocardiogram (ECG or EKG)** - Records the heart's electrical signals and can help your doctor detect irregularities in your heart's rhythm and structure
  - **Holter monitoring** – A portable device you wear to record a continuous EKG, usually for 24 to 72 hours
  - **Echocardiogram** – An ultrasound of the chest that shows detailed images of the heart's structure and function
  - **Stress test** – Involves raising your heart rate with exercise or medicine while performing tests and imaging to see how your heart responds
  - **Cardiac catheterization** – Using a guide catheter (inserted into a vein or artery), special dye, and x-ray to measure the pressure in your heart chambers and see the blood flow through your heart, vessels, and valves

# Treating Cardiovascular Disease

- CVD treatments vary by condition
- In general, CVD treatment usually includes:
  - **Lifestyle changes** - Eating a heart-healthy diet, getting at least 30 minutes of moderate exercise on most days of the week, quitting smoking, and limiting alcohol intake
  - **Medications** – If lifestyle changes alone aren't enough, your doctor may prescribe medications to control your CVD
  - **Medical procedures or surgery** – If medications aren't enough, it's possible your doctor will recommend specific procedures or surgery



# Total health



**Emotional**



**Financial**



**Physical**



**Purpose**



**Social**

# Sources

- American Heart Association ([www.heart.org](http://www.heart.org))
- Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov))
- Mayo Clinic ([www.mayoclinic.org](http://www.mayoclinic.org))
- National Heart, Lung and Blood Institute ([www.nhlbi.nih.gov](http://www.nhlbi.nih.gov))
- World Health Organization ([www.who.int](http://www.who.int))