



## **Cardiovascular Services – Frequently Asked Questions**

### **What are the major risk factors of heart disease?**

The major risk factors for heart disease are smoking, high cholesterol levels, high blood pressure, physical inactivity, obesity, diabetes, age, gender, and heredity (including race).

### **What is high blood pressure and how is it treated?**

Your heart pumps blood through a network of arteries, veins, and capillaries. The moving blood pushes against the arterial walls, and this force is measured as blood pressure.

High blood pressure results from the tightening of very small arteries (arterioles) that regulate the blood flow through your body. As these arterioles tighten (or constrict), your heart has to work harder to pump blood through the smaller space, and the pressure inside the vessels grows.

High blood pressure is so dangerous because it often has no symptoms. High blood pressure tends to run in families. Men are at higher risk than women, and blacks are at greater risk than whites.

In most cases, high blood pressure can be controlled by eating a low-fat and/or low-salt diet; losing weight, if necessary; beginning a regular exercise program; learning to manage stress; quitting smoking; and drinking alcohol in moderation, if at all. Medicines, called antihypertensives, are available if these changes do not help control your blood pressure within 3 to 6 months.

### **What is cholesterol and why is it so important?**

Cholesterol is a fat-like substance (lipid) found in all body cells. Your liver makes all of the cholesterol your body needs to form cell membranes and make certain hormones. Extra cholesterol enters your body when you eat foods that come from animals (meats, eggs, and dairy products). Although we often blame the cholesterol found in foods that we eat for raising blood cholesterol, the main culprit is saturated fat, which is also found in our food. So, we should limit foods high in cholesterol or saturated fat. Foods rich in saturated fat include butter fat in milk products, fat from red meat, and tropical oils such as coconut oil.

Cholesterol travels to cells through the bloodstream in special carriers called lipoproteins. Two of the most important lipoproteins are low-density lipoprotein (LDL) and high-density lipoprotein (HDL). Doctors look at how LDL and HDL relate to each other and to total cholesterol.

LDL particles deliver cholesterol to your cells. LDL cholesterol is often called "bad cholesterol" because high levels are thought to lead to the development of heart disease. Too much LDL in the blood causes plaque to form on artery walls, which starts a disease process called atherosclerosis. When plaque builds up in the coronary arteries that supply blood to the heart, you are at greater risk for having a heart attack.

HDL particles carry cholesterol from your cells back to your liver, where it can be eliminated from your body. HDL is known as "good cholesterol" because high levels are thought to lower your risk for heart disease.

### **What are triglycerides?**

Triglycerides are fats that provide energy for your muscles. Like cholesterol, they are delivered to your body's cells by lipoproteins in the blood. If you eat foods with a lot of saturated fat or carbohydrates, you will raise your triglyceride levels. Elevated levels are thought to lead to a greater risk for heart disease, but scientists do not agree that high triglycerides alone are a risk factor for heart disease.

Although triglycerides serve as a source of energy for your body, very high levels can lead to diabetes, pancreatitis, and chronic kidney disease. As triglyceride levels rise, HDL levels fall, which may help explain why people with high triglycerides appear to have an increased risk for heart disease.

### **What is atherosclerosis?**

Atherosclerosis is a condition where a waxy substance forms inside the arteries that supply blood to your heart. This substance, called plaque, is made of cholesterol, fatty compounds, calcium, and fibrin (a blood-clotting material). Scientists think atherosclerosis begins when the very inner lining of the artery (the endothelium) is damaged. High blood pressure, high levels of cholesterol, fat, and triglycerides in the blood, and smoking are believed to lead to the development of plaque.

Atherosclerosis may continue for years without causing symptoms.

### **What is coronary bypass surgery?**

Bypass surgery improves the blood flow to the heart with a new route, or "bypass," around a section of clogged or diseased artery.

The surgery involves sewing a section of vein or artery from the leg or chest (called a graft) to bypass a part of the diseased coronary artery. This creates a new route for blood to flow, so that the heart muscle will get the oxygen-rich blood it needs to work properly.

Coronary bypass surgery has proved safe and effective for many patients who have the procedure. You can expect to stay in the hospital for about a week after surgery, including at least 1 to 3 days in the Intensive Care Unit (ICU). Your doctor may also recommend that you participate in a cardiac rehabilitation program. These programs are designed to help you make lifestyle changes like starting a new diet and exercise program, quitting smoking, and learning to deal with stress.

**Besides coronary bypass surgery, what other treatment options are available to a patient with narrowed or blocked arteries?**

A severely narrowed coronary artery may need treatment to reduce the risk of a heart attack. Coronary bypass surgery is one form of treatment, but there are other therapies that have been found effective among carefully selected patients.

**Angioplasty**, which opens narrowed arteries, is performed by interventional cardiologists. They use a small balloon-tipped catheter that they inflate at the blockage site to flatten the plaque against the artery wall. A thin wire is inserted into an artery in the leg and is guided to the site of narrowing in the coronary artery. The catheter is slipped over this guidewire and positioned at the blockage, where the balloon is inflated. After treatment, the wire, catheter, and balloon are removed. The hospital stay and recovery time for this procedure are shorter than that of bypass. But, about 35% of patients are at risk for more blockages in the treated area (called restenosis). If restenosis is going to occur, it will usually happen within 6 months of the procedure.

A **stent** procedure is used in conjunction with balloon angioplasty. It involves implanting a mesh-like metal device into an artery at a site narrowed by plaque. The stent is mounted on a balloon-tipped catheter, threaded through an artery, and positioned at the blockage. The balloon is then inflated, opening the stent. Then, the catheter and deflated balloon are removed. The opened stent keeps the vessel open and stops the artery from collapsing. Restenosis rates are generally around 15-20%.

**Atherectomy** may be an option for certain patients who cannot have balloon angioplasty. A high-speed drill on the tip of a catheter is used to shave plaque from artery walls.

**Laser ablation** uses a catheter that has a metal or fiberoptic probe on the tip. The laser uses light to "burn" away plaque and open the vessel enough so that a balloon can further widen the opening.

**What is arrhythmia?**

Arrhythmias are irregular heartbeats caused by a disturbance in the electrical activity that paces your heartbeat. Arrhythmias cause nearly 340,000 deaths each year. Almost everyone's heart skips a beat at one time or another. These mild, one-time palpitations are harmless. But there are more than 4.3 million Americans who have recurrent arrhythmias, and these people should be under the care of a doctor.

Arrhythmias can be divided into two categories: ventricular and supraventricular. Ventricular arrhythmias happen in the heart's two lower chambers, called the ventricles. Supraventricular arrhythmias happen in the structures above the ventricles, mainly the atria, which are the heart's two upper chambers.

Arrhythmias are further defined by the speed of the heartbeats. A very slow heart rate, called bradycardia, means the heart rate is less than 60 beats per minute. Tachycardia is a very fast heart rate, meaning the heart beats faster than 100 beats per minute.

### **What is atrial fibrillation?**

Atrial fibrillation is a fast, irregular rhythm where single muscle fibers in your heart's upper chambers twitch or contract. According to the American Heart Association (AHA), atrial fibrillation is a major cause of stroke, especially among older people. This irregular rhythm may cause blood to pool in the heart's upper chambers. The pooled blood can lead to clumps of blood called blood clots. A stroke can occur if a blood clot travels from the heart and blocks a smaller artery in the brain (a cerebral artery).

### **What is a pacemaker and how does it work?**

A pacemaker is a surgically implanted device that helps to regulate your heartbeat. Pacemakers use batteries to produce electrical impulses that make the heart pump. The impulses flow through tiny wires (called leads) that are attached to the heart. The impulses are timed to flow at regular intervals.

Most pacemakers work only when they are needed. These are called demand pacemakers. They have a sensing device that either shuts off the pacemaker if the heartbeat is above a certain rate or turns the pacemaker on when the heart is beating too slowly.

Pacemaker batteries can last up to five years or longer. Pacemakers and batteries can be replaced during a minor surgical procedure.

### **What is mitral valve prolapse?**

The mitral valve regulates the flow of blood from the upper-left chamber (the left atrium) to the lower-left chamber (the left ventricle). Mitral valve prolapse (MVP) means that one or both of the valve flaps (called cusps or leaflets) are enlarged, and the flaps' supporting muscles are too long. Instead of closing evenly, one or both of the flaps collapse or bulge into the atrium. MVP is often called **click-murmur syndrome** because when the valve does not close properly, it makes a clicking sound and then a murmur.

MVP is one of the most common forms of valve disease. It happens more often in women and tends to run in families. Most of the time, MVP is not a serious condition. Some patients say they feel palpitations (like their hearts skip a beat) or sharp chest pain. If you have MVP, you should talk to your doctor about taking antibiotic medicine before dental procedures or general surgery, especially if you have mitral regurgitation or thickened valve leaflets. This medicine will prevent infection of the valve.

### **What is congestive heart failure?**

Heart failure means your heart is not pumping as well as it should to deliver oxygen-rich blood to your body's cells.

Congestive heart failure (CHF) happens when the heart's weak pumping action causes a buildup of fluid (called congestion) in your lungs and other body tissues. CHF usually develops slowly. You may go for years without symptoms, and the symptoms tend to get worse with time. This slow onset and progression of CHF is caused by your heart's own efforts to deal with its gradual weakening. Your heart tries to make up for this weakening by enlarging and by forcing itself to pump faster to move more blood through your body.

Many therapies can help to ease the workload of your heart. Treatment options include lifestyle changes, medicines, transcatheter interventions, and surgery.

### **What does the term "enlarged heart" mean?**

An enlarged heart means the heart is larger than normal due to heredity, or disorders and diseases such as obesity, high blood pressure, and viral illnesses. Sometimes doctors do not know what makes the heart enlarge.

### **What is cardiac catheterization?**

Cardiac catheterization is the method doctors use to perform many tests available for diagnosing and for treating coronary artery disease. Cardiac catheterization is used with other tests such as angiography and electrophysiology studies (EPS).

The method involves threading a long, thin tube (called a catheter) through an artery or vein in the leg or arm and into the heart. Depending on the type of test your doctor has ordered, different things may happen during cardiac catheterization. For example, a dye may be injected through the catheter to see the heart and its arteries (a test called angiography), or electrical impulses may be sent through the catheter to study irregular heartbeats (tests called electrophysiology studies).

### **What is a thallium stress test?**

A stress test is a common test that doctors use to diagnose coronary artery disease. The test helps doctors see how the heart is working. A thallium stress test is a nuclear study in which a radioactive substance is injected into your bloodstream to show how blood flows through your arteries. Doctors can see if parts of the heart muscle are damaged or dead, or if there is a serious narrowing in an artery.

### **What is the difference between a "beta blocker" and a "clot buster?"**

A beta blocker is a medicine that limits the activity of a hormone called epinephrine. Epinephrine increases blood pressure and heart rate. So, beta blockers work by limiting the activity of epinephrine, which, in turn, lowers your blood pressure and decreases your heart rate.

Clot busters are thrombolytic agents that may be given if you are having a heart attack or an ischemic stroke (a stroke caused by a blood clot). The term thrombolysis means to dissolve a clot, and that is exactly what these medicines do. In some cases, these medicines can dissolve a clot within minutes.

Clot busters work best when given right away. Some studies have shown that the medicines may offer little benefit if they are given more than a few hours after the first symptoms of a heart attack or ischemic stroke.

## **What is carotid artery disease?**

Carotid artery disease is a form of disease that affects the vessels leading to the head and brain (cerebrovascular disease). Like the heart, the brain's cells need a constant supply of oxygen-rich blood. This blood supply is delivered to the brain by the 2 large carotid arteries in the front of your neck. If these arteries become clogged or blocked, you can have a stroke.

Carotid artery disease is usually caused by atherosclerosis, which is a hardening and narrowing of the arteries. As we age, fat deposits, cholesterol, calcium, and other materials build up on the inner walls of the arteries. This build-up forms a wax-like substance called plaque. As the plaque builds up, the arteries become narrower, and the flow of blood through the arteries becomes slower.

Lifestyle changes, medicines, transcatheter interventions, or surgery can be used to treat carotid artery disease and lower your risk of a stroke.

## **What is an aneurysm and how is it treated?**

An aneurysm is a balloon-like bulge in a blood vessel that can affect any large vessel in your body. An aneurysm happens when the pressure of blood passing through part of a weak blood vessel forces the vessel to bulge outward, forming what you might think of as a thin-skinned blister. Not all aneurysms are life threatening, but those found in the arteries in our bodies often need to be treated. If the bulging stretches the artery too far, this vessel may burst, causing a person to bleed to death.

Aneurysms can occur in blood vessels anywhere in the body. They usually form in the brain or in the aorta (the main artery carrying blood from the heart). In many cases, aneurysms are associated with other types of cardiovascular disease, especially high blood pressure and atherosclerosis. Traumatic injuries, infections, and congenital conditions can also lead to an aneurysm.

Treatment depends on the size and location of your aneurysm and your overall health. Aneurysms in the upper chest (ascending aorta) are usually operated on right away. Aneurysms in the lower chest or the area below your stomach (descending thoracic and abdominal portions of the aorta) may not be as life-threatening. Aneurysms in these locations are watched regularly. If they become about 5 cm (almost 2 inches) in diameter, continue to grow, or begin to cause symptoms, your doctor may want you to have surgery to stop the aneurysm from bursting.

Doctors also may prescribe medicine, especially medicine that lowers blood pressure (such as a beta blocker), to relieve the stress on the arterial walls. Medicine to lower blood pressure is especially useful for patients where the risk of surgery may be greater than the risk of the aneurysm itself.

Cardiologists at the Texas Heart Institute have been using a nonsurgical technique to treat high-risk patients with aortic aneurysms. This technique is useful for patients who cannot have surgery because their overall health would make it too dangerous. The procedure uses a balloon-tipped catheter to insert a spring-like device called a stent at the site of the aneurysm. The balloon is inflated to open up the stent, and once the catheter and deflated balloon are removed from the artery, the stent acts as a barrier between the blood and the arterial wall. The blood flows through the stent, decreasing the pressure on the wall of the weakened artery. This decrease in pressure can prevent the aneurysm from bursting.

## **What is a stroke and what are the warning signs of stroke?**

A stroke is an injury to the brain that may also severely affect the body. A stroke happens when blood supply to part of the brain is cut off or when there is bleeding into or around the brain. This can happen if a blood clot blocks an artery in the brain or neck or if a weakened artery bursts in the brain.

Risk factors for stroke include high blood pressure, smoking, heart disease, diabetes, and a high red blood cell count. The risk of stroke also increases with age. Heavy alcohol use increases your risk of bleeding (hemorrhagic) strokes.

The warning signs for stroke may include a sudden, temporary weakness or numbness in your face or in your arm or leg; trouble talking or understanding others who are talking; temporary loss of eyesight, especially in one eye; double vision; unexplained headaches or a change in headache pattern; temporary dizziness or staggering when walking; or a transient ischemic attack (TIA).