Heart FAQ’s

What is Angina?

Like all of your body organs, your heart needs a blood supply in order to function. Angina is your body’s way of telling you that your heart is not getting enough blood rich in oxygen. Angina is not a disease itself, but it is a symptom of coronary artery disease—a progressive narrowing of the arteries that carry oxygen-rich blood to the heart muscle. As coronary arteries narrow, less oxygen gets to the heart muscle and the result may be temporary pain or discomfort, which may go away with rest or medication. If you have angina, it does NOT mean that each episode of pain is a “heart attack.” But if you ignore it or don’t treat it, angina can get worse and may result in permanent heart damage.

What does Angina feel like?

Angina discomfort may take many forms. It may feel like indigestion, or you may feel a fullness, squeezing, pressure or tightness in your chest. The discomfort may travel to other areas of your body, such as your arms, neck, jaw or upper back. The pain or discomfort may be in these other areas, but not in your chest.

What contributes to Angina?

A number of things may “trigger” an angina episode. These include:
1. Exertion—such as shoveling snow, heavy lifting, straining or hurrying. Such activity makes your heart work harder.
2. Eating—especially a heavy meal. Digestion makes your heart work harder.
3. Emotion upset—such as strong outbursts of anger, fear or worry. Emotional activity can increase your heart rate. Thus, your heart will need more oxygen.
4. Exposure—to extreme temperatures. Cold constricts your blood vessels and heat increases your heart rate.
5. High altitudes—there is less oxygen at high altitudes and your heart works harder to compensate.
6. Cigarette smoking—replaces oxygen in the blood with carbon monoxide and increases your heart rate. Thus, more oxygen is needed but less is available.

What is angioplasty?

As an alternative to coronary bypass surgery, angioplasty is an effective treatment therapy in carefully selected patients.

Angioplasty is performed by interventional cardiologists to open narrowed arteries. They use a small balloon-tipped catheter which they inflate at the blockage site to flatten the built up plaque against the artery wall. A thin wire is inserted into an artery in the leg and guided to the site of narrowing in the coronary artery. The catheter is then slipped over this guidewire and positioned at the blockage where the balloon is then 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 surgery.

**What are Arrhythmias?**

The term arrhythmia refers to any change from the normal sequence of the electrical impulses, causing abnormal heart rhythms. This can cause the heart to pump less effectively. Some arrhythmias are so brief (for example, a temporary pause of premature beat) that the overall heart rate or rhythm isn’t greatly affected. But if arrhythmias last for some time, they may cause the heart rate to be slow or too fast or the heart rhythm to be erratic.

**When can Arrhythmias occur?**

- When the heart’s natural pacemaker develops an abnormal rate or rhythm
- When the normal conduction pathway is interrupted
- When another part of the heart takes over as pacemaker

**What are some symptoms of Arrhythmias?**

Arrhythmias can produce a broad range of symptoms, from barely perceptible to cardiovascular collapse and death.

A single premature beat may be felt as a “palpitation” or “skipped beat.” Premature beats that occur often or in rapid succession may cause a greater awareness of heart palpitations or a “fluttering” sensation in the chest or neck.

When arrhythmias last long enough to affect how well the heart works, more serious symptoms may develop. At slower rates (bradycardias), the heart may not be able to pump enough blood to the body. This can cause fatigue, dizziness, lightheadedness, fainting or near-fainting spells, or even death. Death occurs if the heart rate is so slow that the heart and brain stop working.

Rapid heart rates (tachycardias) can interfere with the ventricles’ ability to properly fill with blood. This reduces the heart’s ability to pump and circulate blood effectively. Underlying heart muscle abnormalities or atherosclerosis (a buildup of fats, cholesterol and other substances) in the coronary arteries may reduce the pumping efficiency even more.

**How should Arrhythmias be treated?**

Once an arrhythmia has been documented, it’s important to try to find out where it originates. It’s also necessary to find out whether it’s abnormal or merely reflects the heart’s normal processes. The arrhythmia must be abnormal and clinically significant
before it warrants treatment. That means it must either cause symptoms or put a person at risk for more serious arrhythmias or complications of arrhythmias in the future.

In some patients whose symptoms suggest arrhythmias, tachycardias or bradycardias may be found during diagnostic (particularly electrophysiologic) tests. In these cases, a doctor must judge whether the arrhythmia is a likely enough explanation for the patient’s original symptoms to justify therapy. The risks and benefits of the intervention also must be taken into account.

What is Atherosclerosis?

Atherosclerosis comes from the Greek word athero (meaning gruel or paste) and sclerosis (hardness). It is a process in which plaque builds up in the wall of an artery. Plaque is made up of deposits of fats, cholesterol and other substances. Plaque formations can grow large enough to significantly reduce the blood’s flow through an artery. When a plaque formation becomes brittle, it may rupture, triggering a blood clot to form. A clot may either further narrow the artery, or completely block it. When that blockage occurs in a coronary artery, it can cause a heart attack. When it occurs in a carotid artery, it can cause a stroke. If the blockage remains in the peripheral arteries, it can cause pain, changes in skin color, sores or ulcers and difficulty walking. Total loss of circulation to the legs and feet can cause gangrene and loss of a limb.

What is cardiac catheterization?

This is a procedure done on the heart. A doctor inserts a thin plastic tube (catheter) into an artery or vein in the arm or leg. It can then be advanced into the chambers of the heart or into the coronary arteries.

This test can measure blood pressure within the heart and how much oxygen is in the blood. It’s also used to get information about the pumping ability of the heart muscle. Catheters are also used to inject dye into the coronary arteries. This is called coronary angiography or coronary arteriography. Catheters with a balloon on the tip are used in the procedure called percutaneous transluminal coronary angioplasty. Catheterization is also done on infants and children to examine or treat congenital heart defects.

What is cardiovascular disease?

Cardiovascular disease is the leading cause of death in both men and women in the U.S. Cardiovascular disease includes a number of conditions affecting the structures or function of the heart. They can include:

Angina - chest pain that occurs when the heart doesn’t get enough blood – along with the oxygen it carries – to work effectively during periods of exertion or emotional excitement.
Arteriosclerosis – a group of disorders causing thickening and loss of elasticity of the arteries.

Atherosclerosis - a type of arteriosclerosis which results from injury to the walls of the arteries, along with deposits of cholesterol.

Coronary artery disease – the general term for heart attack and angina.

Heart attack – (or myocardial infarction) occurs when a portion of the heart is severely deprived of its blood supply because of blockage in one of the coronary arteries.

High blood pressure – (also called hypertension) is a sign that the heart is working harder than normal to pump blood through the arteries. High blood pressure over an extended period of time causes the heart to enlarge and can lead to heart attacks, stroke, kidney failure, and atherosclerosis.

Ischemia – a lack of blood supply to an organ or tissue.

Stroke – occurs when a blood vessel leading to the brain bursts or becomes blocked by a blood clot or other particle, depriving oxygen to a portion of the brain.

**What are the Carotid Arteries?**

Your arteries carry oxygen – rich blood away from the heart to the head and body. There are two carotid arteries (one on each side of the neck) that supply blood to the brain. The carotid arteries supply the large, front part of the brain, where thinking, speech, personality, sensory and motor functions reside.

**What is carotid artery disease?**

Like the blood vessels of the heart (coronary arteries), the carotid arteries also develop atherosclerosis, the build-up of fat and cholesterol deposits, called plaque, on the inside of the arteries. Over time, the build-up narrows the artery, decreases blood flow to the brain and can lead to a stroke. A stroke can occur if:

- The artery becomes extremely narrowed
- A piece of plaque breaks off and travels to the smaller arteries of the brain
- A clot forms and blocks a narrowed artery

A stroke is similar to a heart attack. A stroke occurs when brain cells (neurons) are deprived of the oxygen and glucose carried to them by blood. Oxygen and glucose are essential for neurons to function and survive. If the lack of blood flow lasts for more than 3 to 6 hours, the damage is usually permanent.

**What are the risk factors for carotid artery disease?**
• Family history of atherosclerosis (either coronary artery disease or carotid artery disease)
• Age (greater in men than women less than age 75, but higher in women after age 75)
• Smoking
• Hypertension
• Diabetes
• High low density lipoprotein (LDL, bad cholesterol) – although this link is not as strong as it is for coronary artery disease.

What are the symptoms of carotid artery disease?

There may not be any symptoms of carotid artery disease. However, there are warning signs of a stroke. A transient ischemic attack (also called TIA or “Mini-stroke”) is one of the most important warning signs of a stroke. A TIA is a temporary episode of:
• Blurred or loss of vision in one or both eyes
• Weakness and/or numbness of your arm, let or face on one side of your body
• Slurring of speech, difficulty talking or understanding what others are saying
• Loss of coordination, dizziness or confusion
• Trouble swallowing

A TIA may last a few minutes or a few hours. A TIA is a medical emergency since it is impossible to predict if it will progress into a major stroke. If you or someone you know experience these symptoms, get emergency help. Immediate treatment can save your life or increase your chance of full recovery.

How is carotid artery disease diagnosed?

Carotid artery disease may not have symptoms. It is important for those at risk to have regular physical exams by their doctor. A doctor will listen to the arteries in your neck with a stethoscope. It is important to let your doctor know if you have had any symptoms.

Diagnostic tests include:
• Carotid Duplex ultrasound – an imaging procedure that uses high-frequency sound waves to view the blood vessels in the neck and to determine the presence of narrowing in the carotid arteries. This study is recommended in anyone with heart disease and anyone over the age of 60.
• Carotid Angiography (carotid angiogram, carotid arteriogram, carotid angio) – If carotid artery disease is suspected, prior to treatment, your doctor may schedule an arteriogram. This is an invasive imaging procedure that involves inserting a catheter into a blood vessel in the arm or leg, and guiding it to the carotid arteries with the aid of a special x-ray machine. Contrast dye is injected through the catheter so that x-ray movies of your carotid arteries are taken.
• Computerized Tomography (CT Scan) a CT of the brain may be performed if there is a possibility a stroke has already occurred. This test will reveal areas of damage on the brain.

How is carotid artery disease treated?

• Lifestyle modification
• Medications
• Procedures

What type of lifestyle modifications are required to prevent further progression of coronary and carotid artery disease?

These include:
• Quit smoking and using tobacco products
• Control high blood pressure and diabetes
• Have regular check-ups with your doctor
• Have your doctor check your lipid profile and get treatment, if necessary to reach a lipid goal of LDL less than 100 and HDL greater than 45
• Eat foods low in saturated fats and cholesterol
• Achieve and maintain a desirable weight
• Exercise regularly
• Control other stroke risk factors: limit the amount of alcohol you drink and if you have atrial fibrillation, you should be on blood-thinning medications.

What type of medications may be prescribed?

Blood-thinner (anticoagulant) medications – Aspirin will decrease the risk of stroke due to blood clots for patients with carotid disease. In some cases, Coumadin (Warfarin) may be prescribed, if so, blood work will need to be checked regularly to ensure you are on the proper dose.

What type of procedures may be performed if the carotid artery has severe narrowing or blockage?

If the carotid artery has severe narrowing or blockage, a procedure must be done to open the artery and allow blood flow to the brain, to prevent future stroke:

• Carotid Stenting – This interventional procedure is currently under investigation. Performed in a catheterization laboratory, a small puncture is made in the groin. A specially designed catheter, with an umbrella tip is placed over a guide wire, and directed to the area of narrowing in the carotid artery. Once in place, a small balloon tip is inflated for a few seconds to dilate the artery. Then, the stent (a small stainless steel mesh tube that acts as a scaffold to provide support inside your artery) is placed in the artery and opens to fit the size of the artery. Tiny filters are used to capture any particles that are released and prevent them from
going to the brain and causing a stroke. The stent stays in place permanently. After several weeks, your artery heals around the stent. Research is underway to study the effectiveness and safety of carotid stenting. It is hoped this procedure will offer a non-surgical option to treat carotid artery disease.

- **Carotid Endarterectomy** - This is the standard surgical treatment for carotid artery disease. While the patient is under general anesthesia, an incision is made in the neck, at the location of the blockage. The surgeon opens the carotid artery and removes the plaque and diseased portions of the artery. Then, the artery is sewn back together to allow blood flow to the brain.

**What is a Catheter?**

During a coronary procedure, a long, flexible tube called a catheter is inserted into a blood vessel and advanced toward the heart. Doctors use the catheter to diagnose narrowed coronary arteries. They can also use the catheter to widen narrowed arteries and improve the flow of blood to the heart muscle.

**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 is Congestive Heart Failure?**
Congestive Heart Failure (CHF) is a term used to describe your heart’s inability to pump enough oxygenated blood to meet your body’s needs.

Because of a variety of causes, your heart may have weakened as a pump. It cannot contract as forcefully as needed. It has nothing to do with your heart skipping or failing to beat. It has more to do with the force of contraction.

**What causes Congestive Heart Failure?**

There are many causes of heart failure. Most commonly, heart failure is due to past heart attacks (Myocardial Infarctions) when muscle tissue of the heart has been damaged and pumping ability has been lost. Heart function may be lost due to narrowed coronary arteries that supply the muscle of the heart. Lack of blood flow to the heart impairs the heart muscle’s ability to function properly.

High blood pressure, disease of the heart muscle (Cardiomyopathy) or heart valves, birth defects, severe anemia, overactive thyroid, and heart rhythm problems are some other causes of CHF.

**What are the most common symptoms of Congestive Heart Failure?**

Symptoms can include but may not be limited to any of the following. Always check with your doctor and let him or her decide if the symptom is a warning sign and whether or not you require treatment.

Shortness of breath: (due to fluid accumulating in the lung tissues) Shortness of breath may be all the time, with increased activity, or may just occur at night when trying to rest. Some people have difficulty when trying to sleep using just one pillow in bed. They may feel relief when propping up on several pillows.

Sudden weight gain: (also due to fluid accumulation (2-5 lbs. in weight gain in a period of 1-4 days.

Swelling of the legs/feet: (or in the lower back if on bed rest). Tissues may swell as fluid builds up in the body. In patients with CHF, this may show worsening heart failure.

Cough: Cough may be productive and increased in frequency or a dry non-productive cough.

Fatigue: may be present due to inability of the heart to meet oxygen demands by the body. May vary in severity.

Inability to sleep: May be associated with shortness of breath or inability to lay flat in bed.
What causes Coronary Artery Disease?

A tendency to develop artery disease may be inherited by some people.

Coronary artery disease probably begins with some form of injury to the inner wall of the artery. High blood pressure and cigarette smoking are two factors, which may contribute to arterial wall damage. When the wall is injured, its smooth surface becomes rough and this makes it more susceptible to deposits of cholesterol and other fatty substances in the blood. As these substances collect at the site of the injury, the inside of the artery becomes narrow and is less able to carry an adequate supply of blood.

This disease process is called atherosclerosis (often referred to as “hardening of the arteries”). When it develops in the coronary arteries, it is known as coronary artery disease, and a heart attack or angina may result. When it develops in one of the brains’ arteries, a stroke may occur. When a leg’s artery is affected, claudication (leg cramps) may occur.

What is coronary bypass surgery?

Bypass surgery improves the blood flow to the heart by creating 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.

What are Coronary Procedure?

Coronary procedures are techniques doctors use to open or widen narrowed coronary arteries.

What is Critical Limb Ischemia?

Critical Limb Ischemia (CLI) is the most severe form of Peripheral Arterial Disease and is common in people with diabetes. CLI is the progressive accumulation of plaque and thrombus in the arteries of the leg, resulting in obstruction of blood flow. If untreated, CLI can lead to rest pain, the development of foot ulcers, and the onset of limb loss.

Is there a cure for CLI?

No, and the prognosis for patients with CLI is poor. CLI, the most severe form of Peripheral Arterial Disease (PAD).

Although there is no cure for CLI, the best way to prevent it is to avoid the risk factors, including smoking, poor diet, lack of exercise, and high blood lipid levels.
How is CLI diagnosed?

Critical Limb Ischemia is characterized by ischemic rest pain, ulcerations and gangrene. Despite these dramatic clues, the diagnosis must be confirmed with objective clinical tests to avoid a misdiagnosis.

How is CLI treated?

Once a patient is diagnosed with CLI, there are three main treatment options. Some patients can undergo bypass surgery – an invasive procedure that reroutes the blood from above an obstruction in the artery to below an obstruction using another artery in the patient’s body or a synthetic graft as a conduit. However, due to the severity of the disease, a large percentage of CLI patients are poor surgical candidates.

Patients who are poor surgical candidates have traditionally been offered medical management as long as possible to avoid losing their limb(s), but, most of these patients end up having to receive an amputation if blood flow is not restored.

Another option for some patients is balloon angioplasty, a procedure for enlarging a narrowed arterial channel by inflating and withdrawing a balloon on the tip of a catheter, sometimes combined with the insertion of a stent, or small mesh tube. But, only about one in four patients with blockages in the small arteries below the knee can be treated with traditional angioplasty, requiring alternative tools for revascularization.

What is excimer laser atherectomy and how does it work?

The basic concept of laser atherectomy is to apply laser light energy directly to arterial blockages—typically made of plaque, thrombus, or calcium—without damaging the surrounding artery.

What is a Drug-Eluting Stent?

A stent is a tiny mesh cylinder using during angioplasty – a minimally invasive procedure used to open blocked coronary arteries by inflating a tiny balloon in the vessel at the site of the blockage. The stent is crimped tightly around the balloon so that it expands into the walls of the blocked artery as the balloon is inflated. Once the blockage is cleared, the balloon is deflated and removed. The stent, however, remains in place, providing a scaffold to keep the artery open, restoring normal blood flow to the heart.

A simple metal scaffold isn’t always enough to prevent arteries from closing up again. This is because of the growth of new tissue inside the vessel as the artery wall heals after the procedure. To limit this new tissue growth and to reduce the likelihood of the artery becoming blocked again, drug-eluting stents were developed. These stents are coated with a drug that diffuses into the artery wall, slowing tissue growth so that the artery remains open.
What is an Echocardiogram?

Pictures/recording of the heart utilizing ultrasonic (sound) waves directed through the chest wall or from inside the esophagus. Information regarding the position, structure and motion of the heart rate are obtained from this procedure. A Sonographer performs the echocardiogram of your heart by moving a small device on the surface of your chest. This device captures images of your heart in motion. The test usually takes 30-45 minutes. The physician need not be present for this exam, but may if he so chooses.

In addition, contrast may be used to enhance the images. The contrast is not “x-ray day” but uses an inert gas that is injected through the vein. It lasts only a few minutes in the body and is then exhaled by the patient through the lungs.

What is an EKG?

An EKG is a tracing of the electrical activity of the heartbeat. It evaluates abnormalities of the patient’s heart rhythm.

What are Event Monitors and how do they work?

Event Monitors are portable devices, prescribed by a physician, to monitor a person’s heart rhythm. The monitor allows the patient, at any given time, to record an EKG and then transmit the data over the telephone lines to a monitoring service. The monitoring service is staffed with specially trained nurses and technicians who are responsible for keeping the doctor fully informed on how each patient’s heart rhythm is doing. The Event Monitors are usually on loan to a patient for 30 days. At the end of the 30 day testing period, patients simply return the device to the doctor’s office.

What causes a heart attack?

A heart attack (or “myocardial infarction”) occurs when blood flow to a part of the heart is blocked, often by a blood clot. This happens because coronary arteries that supply the heart with blood slowly become clogged from a buildup of cells, fat, and cholesterol called “plaque.”

Blood that tries to flow through these clogged arteries may form a clot. If this clot cuts off blood flow completely, the part of the heart muscle supplied by that artery begins to die; thus, the importance of getting to the nearest hospital emergency room as quickly as possible is vital.

What are the early signs of a heart attack?

Early indications that a heart attack may be occurring can include any or all of the following:
• An uncomfortable “heavy” felling, pressure, pain, or squeezing in the center of the chest that lasts for more than a few minutes;
• Pain that radiates to the shoulders, neck, or arms;
• Discomfort in the chest, along with a feeling of lightheadedness, fainting, sweating, nausea, or shortness of breath.

What should I do if symptoms of a heart attack are present?

If you or someone you know find yourself experiencing heart attack symptoms, don’t wait to seek help? Half of all people having an actual heart attack wait more than two hours before getting help! Others feel it would be embarrassing to go to the hospital, only to have a “false alarm,” or possible indigestion. These feelings of fear are easy to understand, but they are also very dangerous.

When a heart attack is suspected. CALL 911 IMMEDIATELY! This means that you must call 911 FIRST – not after calling a neighbor, the doctor, or a family member. Failure to do this can waste critical minutes and cost the victim his or her life.

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, and 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 also available from your doctor to help in controlling high blood pressure.

What are Holter Monitors?

Holter Monitors are portable recording devices that allow a physician to make a continuous diagnostic quality EKG (Electrocardiogram) for up to 24 hours.

The compact recorder is contained in a pouch and can be worn utilizing a belt and/or a shoulder strap. If and when a patient detects an unusual feeling or sensation the patient
can push a button on the recorder to make the event on the recording tape. The physician can view every heartbeat recorded and is able to compare the patient’s symptoms with the actual EKG and make a diagnosis.

**What is an Implantable Cardioverter Defibrillator (ICD)?**

An Automatic Implantable Cardioverter Defibrillator (ICD) is a device that monitors your heart and restores its normal rhythm when it beats too fast. The ICD device is implanted directly in the body. When it receives a signal that the heartbeat is too fast (ventricular fibrillation), the ICD device delivers a small electrical shock to the heart. The shock can cause brief discomfort in the chest, but usually restores the normal heart rhythm. If the first shock does not correct the problem, the ICD device can deliver three or four additional shocks at any one time.

Because the battery eventually runs down, the ICD pulse generator must be replaced every few years, depending in part on how many shocks the system delivers. Pacemakers must be replaced every five to ten years. The Pacemaker and ICD device must also be checked regularly, to make sure that it is in good operating condition.

**What is Ischemic Heart Disease?**

Ischemic heart disease is also known as coronary artery disease and coronary heart disease. Ischemic heart disease occurs when the arteries that supply blood to your heart become hardened, narrowed or blocked due to the buildup of plaque on the inner walls or lining of the arteries. When this buildup occurs and narrows the arteries, the blood flow to the heart is reduced and less oxygen reaches your heart muscle.

Ischemic heart disease is the most common type of heart disease. About 13 million people in the United States have ischemic heart disease. It is the number one killer of both men and women. Each year, more than half a million Americans die from ischemic heart disease.

**What are the effects of Ischemic Heart Disease?**

Chest pain or discomfort, also called angina, can occur when your heart is not getting enough blood and oxygen.

A heart attack happens when a blood clot interrupts most or all of the blood supply to part of your heart. When this happens, cells in the heart muscle that do not get enough oxygen-carrying blood begin to die. A heart attack can cause permanent damage to the heart muscle.

**What are causes of Ischemic Heart Disease?**

Ischemic heart disease is caused by the thickening and hardening of the inside walls of arteries (atherosclerosis). Some hardening of the arteries occurs normally as you grow
older. Your arteries harden and narrow when plaque deposits build up in the arteries. Plaque is made up of fat, cholesterol, calcium, and other substances from the blood. Over time, plaque build up in the coronary arteries:

- Narrows the arteries so that less blood can flow to the heart muscle
- Completely blocks the arteries and the flow of blood
- Causes blood clots to form and block the arteries.

Certain conditions, also known as risk factors, may contribute to the development of ischemic heart disease. Some risk factors cannot be changed by patients. These include:

- Increasing age
- Family history of heart disease

Other risk factors that may contribute to the development of ischemic heart disease can be changed or controlled by patients with ischemic heart disease. The risk factors that you can change include:

- High cholesterol in your blood
- High blood pressure
- Cigarette smoking
- Diabetes
- Being overweight or obese
- Inactive lifestyle

**How do you treat Ischemic Heart Disease?**

Preventing or slowing the progression of your ischemic heart disease begins with knowing your risk factors and taking action to control these risk factors. If you or someone in your family has ischemic heart disease, be sure to tell your doctor. Make sure everyone in your family is getting enough exercise and maintaining a healthy body weight. By controlling or reducing your risk factors with lifestyle changes and medications, you may prevent or slow the development of ischemic heart disease.

**What type of lifestyle changes do I need to make to slow down the progression of ischemic heart disease?**

- Eat a healthy diet to prevent or reduce high blood pressure and high blood cholesterol
- Exercise as directed by your doctor
- Lose weight if you are overweight or obese
- Reduce stress.
- Your doctor may also recommend that you go to cardiac rehabilitation to help you:
  - Learn how to exercise safely
  - Improve your stamina
  - Help you understand your heart condition
  - Find ways to reduce your risk of future heart problems
  - Cope with the stress of adjusting to a new lifestyle
What are some common medications that my doctor may prescribe to treat my ischemic heart disease?

- Statins or other medications that lower your cholesterol.
- Aspirin or Plavix (clopidogrel). These are antiplatelet medications to prevent clots from forming in your arteries and blocking blood flow.
- Ace inhibitors lower blood pressure and reduce the strain on your heart. They also may reduce the risk for a future heart attack and heart failure.
- Beta-blockers slow your heart rate and lower your blood pressure to decrease the workload on your heart. Beta-blockers are used to relieve angina and may also reduce the risk of a future heart attack.

What is a Cardiac Pacemaker?

The best way to correct some types of bradycardia (slower than normal heartbeat) is with a heart pacemaker. Pacemakers have helped thousands of people overcome problems associated with serious arrhythmias. A pacemaker is implanted directly in the body, where it supplies the electrical signals the heart needs to maintain a normal heartbeat. Most pacemakers monitor the heartbeat and deliver electrical signals only when the heart is beating too slowly. Some pacemakers can also adjust the heart’s rhythm to beat faster when you are engaging in physical activity.

How does the Pacemaker / ICD work?

The generator is the brain of the device. It is a small metal case that contains electronic circuitry and a battery. The lead or leads is an insulated wire that is connected to the generator on one end, inside one of the heart’s chambers. The electrode on the end of the lead touches the heart wall and senses the heart’s electrical activity. This information is related to the generator by the lead. If the heart’s rate is slower than the low limit programmed into the generator, an electrical impulse is sent through the lead to the electrode and the pacemaker’s electrical impulse causes the heart to beat at a faster rate. When the heart is beating at a rate faster than the programmed low limit, the pacemaker will monitor the heart rate but no electrical impulses will be sent to the heart unless the heart’s natural rate falls below the pacemaker’s low limit. An ICD looks very similar to a pacemaker; it has a generator, one or more leads, and an electrode for each lead. These components work very much like a pacemaker. However, the ICD is designed to deliver an electrical shock to the heart when the heart rate becomes dangerously fast. New ICD’s can also serve as a pacemaker.

What happens during the Pacemaker/ICD Procedure?

The procedure for inserting either a pacemaker or an ICD is basically the same. You are taken to the electrophysiology (EP) lab or the operating room for the procedure. You will be awake during the procedure, but you will be given a sedative medication to help you relax. An intravenous (IV) line will be placed in your hand or arm. You will be attached
to an EKG monitor. The physician will insert the pacemaker or ICD lead wires into your heart through a vein, usually through the subclavian vein (a large vein just under your collar bone). Once the lead wires are in place, they are tested to make sure they work and are in the correct spot. A small incision will be made just under your collarbone, and the pacemaker or ICD generator (a very small thin metal box just slightly larger than a book of matches; contains a battery and circuitry) will be attached to the lead wires, then inserted into the small pocket for it under the collar bone. The incision is sewn up, and the procedure is finished.

**What is PAD?**

(PAD = peripheral Artery Disease is a condition similar to coronary artery disease (clogged arteries leading to the brain). But it affects arteries leading to areas outside the brain and heart, most often in the legs and feet. In PAD, fatty deposits build up in the inner linings of the artery walls of the legs. This can cause pain in the legs, especially when walking. In extremely severe cases, limb amputation may be needed. This same buildup in the arteries of the heart and brain significantly increases your risk of heart attack and stroke.

**What increases my risk?**

- Smoking
- High blood pressure
- High cholesterol
- Overweight/obesity
- Physical inactivity
- Family history of cardiovascular disease, stroke or PAD

**How would a healthcare professional diagnose PAD?**

PAD diagnosis begins with a physical examination. Your doctor will check for weak pulses in the legs. The ankle-brachial index (ABI) test is also usually done. It’s a painless exam that compares the blood pressure in your feet to the blood pressure in your arms to determine how well your blood is flowing. This inexpensive test takes only a few minutes and can be performed by your healthcare professional as part of a routine exam. Normally, the ankle pressure is at least 90% of the arm pressure, but with severe narrowing it may be less than 50%. If an ABI reveals an abnormal ratio between the blood pressure of the ankle and arm, you may need further testing. Your doctor may recommend one of these other tests:

- Doppler and Ultrasound (Duplex) imaging: a non-invasive method that actually visualizes the artery with sound waves and measures the blood flow in an artery to indicate the presence of a blockage.
- Computed Tomographic Angiography (CT): a non-invasive test that can show the arteries in your abdomen, pelvis and legs. This test is particularly useful in patients with pacemakers or stents.
Angiography can also be used, but is usually reserved for use in conjunction with treatment. During this test a contrast agent is injected into the artery and X-rays are taken to show arteries of the legs and any blockages that may be present.

PAD often goes undiagnosed. This can be dangerous because PAD can lead to painful symptoms, loss of a leg and/or increased risk of coronary artery disease and carotid atherosclerosis. Individuals with PAD have this increased risk for heart attack and stroke. Anyone who is at risk are encouraged to discuss Pad with his or her healthcare professional to ensure early diagnosis and treatment.

**What is the treatment for PAD?**

Peripheral artery disease is treatable. The first step is usually to change your lifestyle such by participating in a regular walking program, wearing special footwear and taking medications to help improve walking distance or to help prevent blood clots from forming.

A minority of patients may also need minimally invasive treatment or surgery, including angioplasty and stent placement or clot removal.

If a long part of an artery in your leg is completely blocked and you have severe symptoms, surgery may be necessary. Doctors can take a vein from another part of the body to bypass and reroute blood around the closed artery. Your healthcare professional will discuss options and help you choose the best procedure for you.

**How can I reduce my risk for PAD?**

- Keep your blood glucose levels as normal as possible.
- Keep your blood pressure under 130/80 mmHg or lower, using medication if it’s prescribed by your doctor.
- Get your cholesterol levels down, with medication if necessary.
- Control your weight.
- Ask your doctor if you should take an aspirin a day.
- Get regular physical activity as indicated by your doctor.
- Eat a heart-healthy diet low in saturated fat, cholesterol and salt.
- If you smoke, quit. If you don’t smoke, don’t start.

**What are the major risks factors of heart disease?**

The major risk factors of heart disease are smoking, high cholesterol levels, high blood pressure, lack of physical activity, obesity, diabetes, age, gender and heredity.

**What is a stent 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 which has been narrowed due to plaque
buildup. 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.

**What is Stress Electrocardiography?**

Stress Electrocardiography (Treadmill Testing) is a commonly used tool for the evaluation of patients with chest pain and/or suspected coronary artery disease. The treadmill also provides a way for the physician to evaluate the functional capabilities of patients with known coronary artery disease as it can measure the effectiveness of medical treatment such as drug therapy, weight loss and even surgical intervention.

The stressing of the heart is accomplished by having the patient walk on a moving belt, called a treadmill, or by peddling on a stationary bicycle. While the patient is exercising the heart rate and blood pressure are monitored along with the EKG. The doctor then compiles all the data and makes appropriate therapy recommendations.

**What are triglycerides?**

Triglycerides are fats that provide energy for your muscles. Like cholesterol, they are delivered to 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.

**What is Ultra Filtration system?**

First, we must understand basically what is going on with the patient.

Fluid retention is defined as “failure to eliminate fluid from the body.” This can be caused by many things including renal failure, post-surgical overload, metabolic disease, and most commonly Heart Failure. Patients with heart failure represent the largest group of fluid-overloaded patients. Heart Failure is the progressive inability of the heart to pump enough blood to support the vital organs and often leads to a buildup of fluid, causing swollen legs and arms, fatigue, and eventually excess fluid in the lungs and severe life-threatening shortness of breath.

Common treatment has always been to use medications like diuretics to help remove fluid. Although these are effective, it may take several days for fluid to be removed and the mediation can be hard on the renal system.

Diuretic resistance is thought to happen in 1 in every 3 patients with CHF. In mild CHF, this problem is rarely seen. In moderate and severe CHF, diuretic resistance happens more often.
A new alternative to the sole use of medications is ultrafiltration. Ultrafiltration uses a technique in which blood containing excess fluid are withdrawn and passed through a special filter (hemofilter). The filter removes the excess fluid from the patient’s blood. The filtered blood is returned to the patient and the removed fluid is collected in a bag for later disposal. This technologically sophisticated mechanical system, can remove up to a pound per hour of excess salt and water from the blood stream without clinically significant effects on kidney function, heart rate, blood pressure or electrolyte balance.

This procedure has demonstrated the ability to reduce the length of stay, rehospitalization and unscheduled medical visits for Heart failure patients without significant adverse effects.