Health Guidelines

What is a heart attack?

A heart attack occurs when the blood supply to part of the heart muscle itself — the myocardium — is severely reduced or stopped. The medical term for heart attack is myocardial infarction. The reduction or stoppage happens when one or more of the coronary arteries supplying blood to the heart muscle is blocked. This is usually caused by the buildup of plaque (deposits of fat-like substances), a process called atherosclerosis. The plaque can eventually burst, tear or rupture, creating a “snag” where a blood clot forms and blocks the artery. This leads to a heart attack. A heart attack is also sometimes called a coronary thrombosis or coronary occlusion. If the blood supply is cut off for more than a few minutes, muscle cells suffer permanent injury and die. This can kill or disable someone, depending on how much heart muscle is damaged.

Sometimes a coronary artery temporarily contracts or goes into spasm. When this happens the artery narrows and blood flow to part of the heart muscle decreases or stops. We’re not sure what causes a spasm. A spasm can occur in normal-appearing blood vessels as well as in vessels partly blocked by atherosclerosis. A severe spasm can cause a heart attack.

What are the major risk factors that can’t be changed?

- Increasing Age
- Male Sex (Gender)
- Heredity (Including Race)

What are the major risk factors you can modify, treat or control by changing your lifestyle or taking medicine?

- Tobacco Smoke
- High Blood Cholesterol
- High Blood Pressure
- Physical Inactivity
- Obesity and Overweight
- Diabetes Mellitus

What other factors contribute to heart disease risk?

- Stress
- Alcohol

What is angiography?

An angiogram is a procedure that can help to diagnose heart conditions. It involves putting a long, thin, flexible tube called a catheter into a blood vessel in your groin or wrist. The catheter is then guided to your heart and a special dye (contrast agent) is injected through the catheter, so that X-ray images show your heart and coronary arteries more clearly.

An angiogram can help to find out if the blood vessels to and from your heart are narrowed or blocked, and if so, where and how badly they are affected. It can also be used to see how well your heart is pumping blood.

An angiogram can be done on adults, children.

Preparing for an angiogrphy

Your doctor will explain how to prepare for your procedure. For example, you may be asked to stop taking anticoagulant medicines (such as warfarin) about two days before the angiogram.

You will be asked not to eat or drink anything for a few hours before you have the angiogram.

The angiogram is usually done as a day case under local anaesthesia. This completely blocks pain from where the catheter enters your blood vessel (in your groin or wrist) and you will stay awake during the procedure. You may be offered a sedative during the procedure. This relieves anxiety and will help you to relax.

Your doctor will discuss with you what will happen before, during and after your procedure, and any pain you might have. This is your opportunity to understand what will happen and you can help yourself by preparing questions to ask about the risks, benefits and any alternatives to the procedure. This will help you to be informed, so you can give your consent for the procedure to go ahead, which you may be asked to do by signing a consent form.

What happens during an angiography?

An angiogram usually takes about 30-50 minutes.

A cardiologist (a doctor who specialises in conditions affecting the heart), specialized cardiac nurse (a health professional trained to perform cardiac investigations) and a radiographer (a health professional trained to perform imaging procedures) will carry out the test. A nurse will usually stay with you throughout the procedure.

Angiograms are carried out in special rooms that are designed to contain all the equipment that is needed for the procedure. You will be asked to change into a hospital gown.

You will be connected to a heart monitor that records your heart rate and rhythm during the procedure. Tell your nurse if at any time you feel unwell or experience any discomfort.

You will lie on a table and an X-ray machine will be positioned above your chest. Your cardiologist will inject local anaesthetic into your skin where the catheter will enter your blood vessel – this is called the entry site.

Your doctor will thread the catheter into the artery in your groin or your wrist, and move it up through the vessel to the opening of your coronary arteries. Your healthcare team will take X-ray images of your heart and your doctor will look at the images on a monitor to carefully guide the catheter into your heart. When the catheter has reached the right place, your doctor will inject a special dye into the catheter. More X-ray images will be taken as the dye flows through your blood vessels and heart. Your doctor will look at these on the monitor to see if there is any narrowing in your blood vessels.

You won't feel the catheter in your artery, but when the dye is injected, you may have a warm feeling.

You will have the catheter removed when the test is complete. Your nurse will either press firmly over the entry site for up to 20 minutes or insert a small collagen plug called an arteriotomy closure device (commonly an angioseal type) to help seal the blood vessel.

If the catheter is inserted into your wrist, you will be given a tight band to wear around your wrist for two to three hours after your angiogram.

What to expect afterwards

If your angiogram was performed from the groin, you will need to lie flat for a few hours to allow the blood vessel to seal properly. Your nurse will regularly check your blood pressure, heart rate and the catheter entry site. If it was done from the wrist, you should be well enough to get up an hour or so after the procedure.

You will usually be able to go home when you feel ready. You will need to arrange for someone to drive you home.

Recovering from an angiogram

Take it easy for the rest of the day and don't do any vigorous walking or heavy lifting for the first few days after you have an angiogram.

The dressing covering the entry site on your skin can be removed and changed if needed after 24 hours. You can have a shower and carefully pat dry your wound afterwards.

Sedation temporarily affects your co-ordination and reasoning skills, so you must not drive, drink alcohol, operate machinery or sign legal documents for 24 hours afterwards.

What are the risks?
Angiograms are commonly performed and generally safe. However, in order to make an informed decision and give your consent, you need to be aware of the possible side-effects and the risk of complications.

Side-effects
Side-effects are the unwanted, but mostly temporary effects you may get after having the procedure. Side-effects of an angiogram may include:

- mild chest pains or a fluttery heartbeat during an angiogram
- bruising and/or swelling at the catheter entry site

Complications
Complications are when problems occur during or after the procedure. Most people are not affected. The possible complications of an angiogram include bleeding during or very soon after the procedure, infection or an unexpected reaction to the anaesthetic.

Other less common complications of an angiogram are listed below.

- Allergic reaction to the dye. This happens in around one in 100 people having an angiogram, but medicines are available to help treat this.
- Irregular heartbeat (arrhythmia) – this is caused by the catheters within the heart or the dye injection, and will settle by the end of the procedure.
- Build-up of blood under your skin (haematoma) – this can happen if your blood vessel is damaged and you may require surgery to drain the area.
- Damage to the blood vessels leading to your heart – you will require urgent surgery to repair the damage.
- Heart attack or stroke – very rarely, the tip of the catheter can dislodge a blood clot or fatty plaque from the wall of your blood vessel. There is a risk that these may block the blood supply to your heart or brain and trigger a heart attack or stroke. This happens in about five in 10,000 people who have an angiogram.
- Fatality. This is very rare and happens in less than one in 10,000 people during or after an angiogram. The risk is increased in people who already have other conditions, such as problems with their lungs or kidneys.

As with every procedure, there are some risks associated with having an angiogram. Ask your doctor to explain how these risks apply to you.

What is coronary artery bypass surgery?

This is a type of heart surgery. It's sometimes called CABG ("cabbage"). The surgery reroutes, or "bypasses," blood around clogged arteries to improve blood flow and oxygen to the heart.

Why do you need bypass surgery?

If you are suffering chest pain or other symptoms that may indicate a cardiovascular problem, your doctor will likely want you to undergo an angiogram (cardiac catheterization) to see if your coronary arteries are blocked by plaque. A blockage can cause a decrease in the supply of blood and oxygen to the heart, and over time can lead to debilitating chest pain or a heart attack.

If angioplasty proves unsuccessful, the position of the blockage is too difficult to access by angioplasty, or you have severe blockages in multiple major vessels, your doctor may recommend that you undergo coronary artery bypass graft (CABG) surgery.

Bypass surgery has been performed for nearly 30 years. Cardiovascular surgeons have received extensive training on bypass techniques. More than 500,000 bypass procedures are performed each year, making it the most frequently performed major surgery in the country.

What happens during bypass surgery?

Bypass surgery is a major operation that usually lasts between two and six hours. Pre-operative medications are often administered by mouth, muscular or subcutaneous injection, or IV. You will receive general anesthesia and be completely asleep. During bypass surgery, the chest bone is separated, and the ribs are spread apart to allow visible and physical access to the heart. In most instances, blood circulation and breathing functions will be taken over by a heart-lung machine. The cardiac surgeon uses a piece of vein or artery to form a bypass to enable blood to go around the blockage. Several blockages can be bypassed during surgery.

How is coronary bypass done?

Surgeons take a segment of a healthy blood vessel from another part of the body and make a detour around the blocked part of the coronary artery.
An artery may be detached from the chest wall and the open end attached to the coronary artery below the blocked area.

A piece of a long vein in your leg may be taken. One end is sewn onto the large artery leaving your heart — the aorta. The other end of the vein is attached or "grafted" to the coronary artery below the blocked area.
Either way, blood can use this new path to flow freely to the heart muscle.

A patient may undergo one, two, three or more bypass grafts, depending on how many Coronary arteries are blocked.

Cardiopulmonary bypass with a pump oxygenator (heart-lung machine) is used for most coronary bypass graft operations. This means that besides the surgeon, cardiac anesthesiologist and surgical nurse, a competent perfusionist (blood flow specialist) is required.

What is a graft?

A graft is a blood vessel that has been created to bypass a blocked artery. It is usually taken from the internal mammary artery in the chest, the saphenous veins from the leg, or in rare instances from the radial artery in the arm. The graft is attached above and below the area in the artery where there is a blockage, so that the blood can use the new, unblocked path to flow freely to the heart.

From stress tests, angiograms and intravascular ultrasounds, your doctor is able to determine exactly how much of the heart structure needs repair. Some patients undergo double, triple or even quadruple bypasses, based on their specific needs. Doctors have found that grafts are most successful when attached to major coronary arteries rather than smaller arterial branches. Doctors have also found better results for bypass surgery when there are discrete, localized blockages rather than a buildup of plaque throughout an artery.

Will my heart be stopped?

In some cases, your blood circulation and breathing functions will be carried out by a heart-lung machine during surgery, also known as cardiopulmonary bypass. However, some coronary artery bypass surgeries are being done while the heart is still beating (called the off-pump technique).

Are there any transfusions involved? Should I bank my own blood?

Ordinarily, as with any serious heart surgery, blood transfusions are necessary during bypass surgery. The blood used for your surgery will be matched by type and Rh factor, and provided by a local blood bank and blood is screened much more carefully for contamination, including AIDS and other infectious diseases.

Bypass procedures have been performed without transfusion. Some patients, such as Jehovah’s Witnesses, are restricted from using another person’s blood. Studies have shown that bypass procedures can be performed “bloodlessly,” although these operations have had a higher rate of mortality.

What are the risks?

The current success rate for bypass surgery is 95 to 98 percent, meaning that between 2 and 5 percent of all patients have complications, including death. The survival rate has improved over time.

As with any surgical procedure, there are risks of infection and heavy bleeding. There also are risks associated with anesthesia. These can include adverse reactions to medication and breathing problems. Postoperative pneumonia and wound infection also are common complications arising from open-heart surgery.

How successful is bypass surgery? Can I expect to live a long life?

Studies have shown in 80 to 95 percent of patients, bypasses made with segments of the mammary artery still performed efficiently 20 years after surgery. Two-thirds to 75 percent of patients who received grafts from leg veins still had satisfactorily unrestricted blood flow after 10 years.

Remember that even if your graft becomes blocked, you may not need additional bypass surgery. However, you may be a candidate for balloon angioplasty and insertion of a stent.

Where will the surgery take place, and how can I prepare for it?

The surgery will be performed in a hospital operating room.

Some individuals are unaware of the extent to which their arteries are clogged until they have a heart attack. In cases such as these, a cardiologist or emergency room doctor will probably quickly determine whether bypass surgery can be successful. There might be little time to discuss options or extensively educate you or your family. Ideally, you have discussed your health history with a cardiologist. You may have been treated with cholesterol lowering or blood pressure-lowering medications for some time. However, because of chest pain or test results from a stress test, it is evident to your doctor that bypass surgery is a necessary step. If you need additional input from your doctor, or perhaps a second opinion, it is in your best interest to get it as quickly as possible. In most cases, advanced coronary artery disease should be treated as soon as possible, to avoid further damage to the heart.

How long is the surgery?

Typically, traditional bypass surgery takes between three and six hours, depending on the number of bypasses to be performed. Minimally invasive bypass surgery usually takes two to three hours.

Will I be awake?

No. You will be under general anesthesia throughout the procedure.

Where will I go directly after surgery?

Patients are typically observed for 34 to 48 hours in the cardiac intensive care unit (CICU). **THE CICU HAS LIMITED VISITATION HOURS.**

What is it like in the CICU? How will I feel after the surgery? When you first wake up in the CICU, you will be groggy or slightly disoriented. This is normal. You will still have a tube in your mouth, connecting you to breathing monitors and apparatus. Until you are able to breathe on your own, you will have difficulty talking (because of the tube) and will be unable to eat.

There are numerous monitors and machines in the CICU; it is not as quiet or cozy as a normal hospital room. Nurses will be watching your vital signs (temperature, pulse, breathing) constantly to make sure that you are recovering as expected. Once your condition has stabilized (approximately34 to 48 hours), you will be moved to a regular hospital room, where you can have more frequent visitors and rest more peacefully.

How long will I be in the hospital?

The overall hospital post surgery stay, including both the CICU and a regular hospital room, is generally seven days(2+5) if you undergo a traditional bypass surgery.

Will I have a special rehabilitation program?

You will be on a specialized postoperative rehabilitation and prevention program, which usually includes supervised exercise, dietary and lifestyle changes. You should be careful to protect the area around the leg or arm from which the vein was harvested. This may take a few months to return to normal.

Will I be in pain after the procedure?
You will receive medications in order to cope with the immediate surgical recovery. However, your doctor should talk to you about the difference between pain from the incision versus pain due to low blood supply to the heart muscle following surgery. If you have any questions about chest pain, contact your doctor. Even if you have had prior surgeries, be aware that bypass patients undergo a more painful recovery than do other surgery patients. However we will take all possible measures to minimize your pain.

When can I walk?

You will be encouraged to walk before you leave the hospital.

When can I drive?

Patients are generally able to drive approximately after our first review.

When can I resume sexual activity?

In most cases, sexual activity can be resumed approximately four weeks after surgery. Your doctor may give you an indicator, such as being able to climb two flights of stairs without stopping, before you resume sexual activity.

When will I be able to return to work?

Depending on the amount of physical exertion required for your job, you will likely be able to work within 12 weeks, and possibly even sooner.

Dietary Guidelines

Healthy food habits can help you reduce three of the major risk factors for heart attack — high blood cholesterol, high blood pressure and excess body weight. They'll also help reduce your risk of stroke, because heart disease and high blood pressure are major risk factors for stroke.

Use up at least as many calories as you take in.

Aim for at least 30 minutes of physical activity on most, if not all, days. To lose weight, do enough activity to use up more calories than you eat every day.

Eat a diet rich in vegetables and fruits.

Choose whole-grain, high-fiber foods.

Eat fish at least twice a week.

Limit how much saturated fat, trans fat and cholesterol you eat.

Select fat-free, 1 percent fat, and low-fat dairy products.

Cut back on foods containing partially hydrogenated vegetable oils to reduce trans fat in your diet.

Cut back on beverages and foods high in calories and low in nutrition, such as soft drinks and foods with added sugar.

Choose and prepare foods with little or no salt.

If you drink alcohol, drink in moderation.

Following these recommendations will help you achieve and maintain a healthy eating pattern. The benefits of that include a healthy body weight, a desirable blood cholesterol level and a normal blood pressure. Every meal doesn’t have to meet all the guidelines. What’s most important is to establish an overall healthy eating plan for the long term.