

WESTERN CARDIOLOGY ASSOCIATES

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Cardiac Tests

Treadmill Tests:

A treadmill test involves continuous ECG, heart rate and blood pressure monitoring during physical exertion. Primarily it is used to detect significant coronary disease (blockages in the coronary arteries). Frequently it is used as a part of the evaluation of those patients with chest pain and arrhythmias (irregular heartbeats). It also provides assessments of the exercise capacity, circulation to the legs and blood pressure and heart rate response to exercise. The test is performed according to the Bruce Protocol which consists of three minute stages that increase in speed and elevation.

Holter Tests:

The Holter monitor is a small device attached to the patient by electrodes and wires that records a continuous ECG. The patient is sent home with the attached monitor to record the heart rhythm for up to 24 hours. The patient is encouraged to perform his/her usual daily activities during this time. A "diary" is given to the patient to write down their activities and any symptoms experienced during that period. The Cardiologist then will match any symptoms to abnormal rhythms. This test is used to detect and document any cardiac arrhythmias or simply to determine the patients' heart rate over a 24-hour period.

Chest X-ray:

Chest x-rays will be ordered to check the patient's lungs and heart. They may also be booked to check and see how well a patient's ribs are healing after surgery or to check for various disease processes.

Blood work:

There are many types of blood work that you will be ordering. These tests will look at everything from the patient's cholesterol levels, to the functioning of the patient's liver and kidneys and the sugar levels in their blood. Blood tests are often booked to check how well medications are working for the patient or to test for side effects caused by some medications.

Ultrasound:

Ultrasound imaging, also called ultrasound scanning or sonography, involves exposing part of the body to high-frequency sound waves to produce pictures of the inside of the body. Ultrasound exams do not use ionizing radiation (x-ray). Because ultrasound images

are captured in real-time, they can show the structure and movement of the body's internal organs, as well as blood flowing through blood vessels. Ultrasound imaging is usually a painless medical test that helps physicians diagnose and treat medical conditions.

Echocardiogram:

An echocardiogram uses sound waves (ultrasound) to create a picture of heart. The recorded waves show the shape, texture and movement of your heart valves, as well as the size of your heart chambers and how well they are working.

Stress Echocardiogram:

A stress echocardiogram is a test that combines a treadmill test and an echocardiogram. An echocardiogram is done at rest and right after peak exercise and the images obtained are compared to look for any anomalies in heart function.

Doppler Ultrasound:

Similar to an echocardiogram, a Doppler ultrasound (or Doppler echocardiography) is a test in which very high frequency sound waves are bounced off your heart and blood vessels. The returning sound waves (echoes) are picked up and turned into pictures showing blood flow through the arteries or the heart itself.

Ejection Fraction: (also known as a Nuclear Ventriculogram or a Muga Scan)

The Ejection Fraction test allows the cardiologist to assess the size of the cavities of the heart and quantifies the strength of the heart muscle.

It involves injecting a tiny amount of a radioactive substance that mixes with the blood and allows taking pictures of the heart in motion.. The computer will give a number (Ejection Fraction or "EF") that represents the strength of the heart as a pump. The EF will assist the cardiologist to choose the right type of heart medications. The EF number correlates with the long-term prognosis of a patient, especially after a heart attack. This test is also available with exercise using a stationary bike. (Victoria only)

MIBI:

A MIBI test is used to determine if the heart muscle is receiving enough blood flow through the coronary arteries. Over a two day period an exercise tolerance test and rest test are completed. During both of these tests a small amount of weak radioactive material (also called an isotope) is injected into the patient's vein. The patient will be asked to wait 1-4 hours after the injection before the heart scan is performed. The radioactive material is temporarily absorbed by the heart muscle which allows the camera to detect parts of the heart that are not getting enough blood because of narrowed, blocked, or damaged arteries. A comparison between the exercise and rest scans gives more information.

Persantine MIBI:

A Persantine test is done for people who are unable to walk on a treadmill, they will receive an injection of persantine which causes an increase in the heart rate, it stimulates the heart as if it were responding to exercise.

Pulmonary Function Test:

Pulmonary function tests is used to measure lung function. PFTs may include simple screening spirometry, formal lung volume measurement, diffusing capacity for carbon monoxide, and arterial blood gases. These studies may collectively be referred to as a complete pulmonary function study. PFT is a generic term used to indicate a battery of studies or maneuvers that may be performed using standardized equipment to measure lung function.

Angiograms:

Cardiac catheterization is an X-ray test that uses radiographic contrast dye to visualize the coronary arteries and pinpoint the presence and severity of blockages. During an Angiogram a special dye is released into the coronary artery via a catheter which is inserted through either the groin or more commonly the right wrist. The dye makes the blood vessels visible when an X-ray is taken of them. Angiography allows doctors to clearly see how blood flows into the heart. This allows them to pinpoint problems within the coronary arteries.

If the test reveals a blockage, patients may be offered one of three treatments: medications only, angioplasty or bypass surgery.

The patient is mildly sedated during the procedure. A local anesthetic is used to numb the area a catheter is inserted into the artery and then advanced under X-ray guidance. The dye is injected into the heart chambers and coronaries and pictures are taken from different angles.

Angioplasty:

An angioplasty is a non-surgical procedure that uses a catheter to place a small structure to open up blood vessels in the heart that have been narrowed by plaque build up.

The blockage can be opened by using a balloon angioplasty or a stent.

A stent is a small screen in a tubular shape made out of stainless steel that holds the artery open. After the blockage has been opened to some extent with a balloon, a second balloon with a small crimped stent is positioned at the place of the blockage and deployed. The expanded stent stays in the artery.

Transesophageal Echocardiogram:

A Transesophageal is a special type of Echocardiogram.

You will be given a mild sedation for this test and they will numb your throat.

The echo transducer is passed down the esophagus. The transducer is at the tip of the tube which releases sound waves that bounce off of your heart and are converted into pictures on a video screen. The doctor can move the tube up and down and sideways to view the different angles of your heart.

General CT Scans:

A CT scan is an X-ray that produces images of your internal organs that are more detailed than those produced by conventional X-ray. CT scans use an X-ray generating device that rotates around your body and a very powerful computer to create cross-sectional images, like slices, of the inside of your body. A CT scan reveals bones and organs as well as adrenal glands, and blood vessels all with a high degree of precision.

CT Angio:

A CT Angio (computed tomography angiography) (CTA) is an examination that uses x-rays to visualize blood flow in arterial and venous vessels throughout the body including the heart. CT combines the use of x-rays with computerized analysis of the images. Beams of x-rays are passed from a rotating device through the area of interest in the patient's body from several different angles to create cross-sectional images, which then are assembled by computer into a three-dimensional picture of the area being studied.

EP study:

The electrophysiology study is a test that helps determine what type of arrhythmia (irregular heartbeat) you have and what can be done to control it. Some electrophysiology studies may involve a "mapping" procedure during which the location of the structure responsible for the rhythm disturbances is carefully located and characterized.

Depending upon particular arrhythmias and the underlying condition of the heart, medical and/or surgical therapy may be recommended. If medical therapy is indicated, an antiarrhythmic medication will be started.

Catheter Ablation:

Some arrhythmias may best be treated by catheter ablation techniques. If an arrhythmia is induced that is amenable to ablative therapy, the physician localizes the structure responsible for the rhythm disturbances and destroys it. Successful catheter ablation usually eliminates any need for antiarrhythmic drug therapy. After overnight observation, patients are usually discharged the following day.

Tilt Table Testing:

If the patient has had recurrent syncope (fainting spells) the tilt table test can help determine how the body responds to changes in position. During the test, patients lie on a table that may be moved to a nearly upright position while symptoms, heart rate, and blood pressure are continuously monitored. The tilt table test is designed to induce syncope under controlled conditions.

Cardioversion:

A cardioversion is a process of restoring the heart's normal rhythm from an abnormal rhythm with the application of direct current.

A cardioversion is performed by placing two external paddles on a patient's chest or with one on the chest and one on the back. A selected amount of energy/electrical pulse is then sent from the paddles through the body to the heart. The energy jolts the heart out of the Atrial Fibrillation and back into normal rhythm. You will be mildly sedated.

Implantable Cardioverter Defibrillator (ICD)

An ICD is a device that regulates irregular heart rhythms by sending an electrical impulse to your heart. The ICD consists of two parts. The leads are wires with electrodes at the tip that transmit electrical signals to and from the heart muscle.

An ICD is implanted to treat dangerously fast heart rates that occur in the lower chambers of the heart and to prevent sudden cardiac arrest.

Implantable Pacemaker

A pacemaker is a device that regulates heart rate and rhythm.

The pacemaker consists of two parts. The leads are wires with electrodes at the tip that transmit electrical signals to the heart muscle from the pulse generator.

These electrical signals cause the heart muscle to contract (pump).

Coronary Artery Bypass Surgery

(CABG) Bypass surgery is performed to improve blood flow problems to the heart muscle caused by the build up of plaque (atherosclerosis) in the coronary arteries. The surgery involves using a piece of blood vessel taken from another part of the body to create a detour or bypass around the blocked portion of the coronary artery.

Heart Valve repair or Replacement

(AVR or MVR)

A surgical procedure used to repair or replace a valve that is not working correctly.

A valve controls the flow of blood by making it move in one direction to the different chambers or parts of the heart. If valve is not working correctly blood flow is impaired.

If a valve does not close properly, blood may leak between the chambers or flow backwards, a condition known as valve regurgitations, insufficiency or incompetence.

If a valve is narrowed (also called stenosed) blood flow through the heart may be restricted.

Heart Transplant Surgery

The removal of a failing heart.

A heart transplant is used to treat severe, end-stage heart failure. For severely ill patients, a mechanical heart may be used temporarily while waiting for a donor heart.

MRI

An MRI scan is a radiology technique that uses magnetic radio waves and a computer to produce images of body structures. The MRI scanner is a tube surrounded by a giant circular magnet. The patient is placed on a moveable bed and is then inserted into the tube. The magnet creates a strong magnetic field which aligns the protons of hydrogen atoms, which are then exposed to a beam of radio waves. This spins the various protons of the body, and they produce a faint signal that is detected by the receiver portion of the MRI scanner. The information is processed by the computer, and an image is produced.