

The Heartbeat Clinic

Amer Suleman M.D

Testing Instructions

“If you ever need anything, we are just a heartbeat away.”

Adrenaline Testing: This test is used to check your catecholamine levels. It's a simple blood draw while you're sitting and standing. You will need to bring dry ice to your appointment and be fasting for 4 hours. The test will take about 45 minutes.

Ambulatory Blood Pressure Monitor (ABM): Measures blood pressure at regular intervals. It is believed to be able to reduce the white coat hypertension effect in which a patient's blood pressure is elevated during the examination process due to nervousness and anxiety caused by being in a clinical setting. Out-of-office measurements are highly recommended. You will wear the ABM for 24 hours and it will take your blood pressure once an hour. After 24 hours you can remove the monitor and take the batteries out. We will need you to return the monitor to our office to receive the data from the monitor. Just wear comfortable clothes. Hook up takes about 15 minutes.

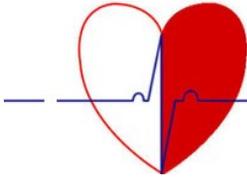
Ankle-Brachial Index Test (ABI): Blood-pressure cuffs are placed on your arms (both arms) and calves (both legs). The blood cuffs are inflated slightly, and waveforms as well as blood pressures are obtained. No special preparation is required for this examination. This procedure is painless and takes approximately 30 minutes.

Ansar Test: Non-invasive diagnostic procedure that determines how well a patient's autonomic nervous system is functioning. The autonomic nervous system is the involuntary part of everyone's neurological make-up and manages just about every system in the body. It controls digestion, sleep, breathing, circulation, blood pressure, heart rate, even stress. The list is practically endless. Before taking the test, you will need to have nothing to heavy to eat. You can eat a light meal before the test is performed. If you usually have nausea with your symptoms, then it recommended to be fasting. This procedure is painless and takes approximately 30 minutes.

Abdominal Aorta Aneurysm Study (AAA): An ultrasound scan of your abdominal aorta is performed to detect aneurysms (weakening and stretching of the walls of the aorta). A water-based gel will be applied to your abdomen, and images of your abdominal aorta and the sound of blood flow will be recorded using an ultrasound transducer. This procedure is painless and will take approximately 30 minutes. It is necessary to refrain from eating and drinking for four hours prior to this procedure.

Arterial Doppler of Lower Extremity: If you have symptoms of peripheral arterial disease (PAD), you may be a candidate for a peripheral vascular ultrasound examination. This study can also be performed on the upper extremities if needed. The purpose of a lower extremity arterial evaluation is to detect the presence, severity, and location of atherosclerosis (narrowing of the arteries caused by plaque) in your legs. Some of the indications for a lower extremity arterial evaluation include leg pain while walking (claudication), leg pain at rest, leg numbness and tingling, or non-healing ulcers or sores of the legs or feet. No special preparation is required for this examination. This procedure is painless and takes approximately 30 minutes.

Balance Test: Procedure that helps diagnosis vestibular disorders or inner ear balance disorders. The vestibular system includes the parts of the inner ear and brain that process the sensory information involved with controlling balance and eye movements. If disease or injury damages these processing areas, vestibular



The Heartbeat Clinic

Amer Suleman M.D

disorders can result. Vestibular disorders can also result from or be worsened by genetic or environmental conditions or occur for unknown reasons. The test is performed while standing with your eyes open and then closed. It is performed on a hard surface then repeated on a foam surface. No special preparation is required for this test. This procedure is painless and takes approximately 15 minutes.

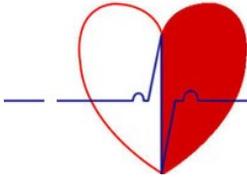
Bardy Monitor: Bardy is an ambulatory cardiac monitoring. It is a 7 to 14-day monitor that will stick to your chest. No special preparation is required for this monitor. Takes about 15 minutes to hook up in the office or we can mail to you to hook up at home.

Carotid Doppler: The purpose of a carotid-artery duplex scan is to detect the presence of atherosclerosis (narrowing caused by plaque) in your carotid arteries, which are the arteries in your neck that supply blood flow to your brain. Some indications for a carotid artery duplex scan include weakness, paralysis, or dysfunction of limbs, change in speech, visual disturbances, numbness or tingling in limbs, fainting and balance disturbances. May be ordered if there is a bruit (sound or murmur) detected when listening to the blood flow in your neck with his stethoscope. A water-based gel will be applied to your neck, and an ultrasound transducer will be used to obtain the images and sound of your blood flow. No special preparation is required for this examination. This scan is painless and takes approximately 30 minutes.

Celiac Doppler: Celiac doppler is an ultrasound test that uses high frequency sound waves (ultrasound) to examine the arteries in your stomach (abdomen.) It is an ultrasound that will check for MALS. You will need to fast for 4 hours for this procedure. This scan is painless and takes approximately 45 minutes.

Echocardiogram (Echo): An echocardiogram is a test in which high-frequency sound waves (ultrasound) are aimed at the heart. The ultrasound waves bounce back to the ultrasound machine, which interprets it as data and as information about the heart. The test can provide data based on size and density, measure the heart chambers, and produce sophisticated images of the beating heart chambers, valves and the major blood vessels of the ventricles. Echocardiography may be performed while you are still, known as a "resting echocardiogram," or while you are performing exercise on a treadmill, commonly known as a "stress echo." For a resting echocardiogram, you will remove clothing from your upper body, put on a gown, and lie on an examination table. No special preparation is necessary. The technician will apply a gel wherever he or she places the echo transducer, make recordings from different parts of the chest, and collect several views of your heart. A monitor will show images of your heart during the test, and these images are also as photographs and on videotape. The tape offers a permanent record of the examination and is reviewed by the physician prior to completion of the final report. No special preparation is required for this procedure. This procedure is painless and takes approximately 45 minutes.

EEG (electroencephalogram): An electroencephalogram (EEG) is a painless procedure that uses small, flat metal discs (electrodes) attached to your scalp to detect electrical activity in your brain. Your brain cells communicate via electrical impulses and are active all the time, even when you're asleep. This activity shows up as wavy lines on an EEG recording. An EEG is one of the main diagnostic tests for epilepsy. An EEG may also play a role in diagnosing other brain disorders. This procedure is painless and takes approximately 1 hour. Wash your hair the night before or the day of the test, but don't use any conditioners, hair creams, sprays or styling gels. Avoid anything with caffeine six hours before the test. Take your usual medications unless instructed otherwise. The technician will measure your head and mark your scalp with a type of pencil, to indicate where to attach the electrodes. Those spots on your scalp may be scrubbed with a gritty cream to



The Heartbeat Clinic

Amer Suleman M.D

improve the quality of the recording. The technician attaches flat metal discs (electrodes) to your scalp using a special adhesive. The electrodes are connected to wires to an instrument that amplifies — makes bigger — the brain waves and records them on computer equipment. Some people wear an elastic cap fitted with electrodes, instead of having the adhesive applied to their scalps. You relax in a comfortable position with your eyes closed during the test. At various times, the technician may ask you to open and close your eyes, perform a few simple calculations, read a paragraph, look at a picture, breathe deeply (hyperventilate) for a few minutes, or look at a flashing light. The procedure takes approximately 45 minutes.

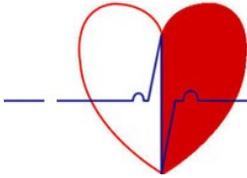
Holter Monitor: Several adhesive patches, called electrodes, will be placed on your chest. These will be connected to a tape-recording monitor so that your heart rate and rhythm can be continuously recorded during the next 24 hours. The monitor will remain attached to you for the next 24 hours. Either a shoulder strap or a belt will be provided so you can carry the monitor conveniently. While you are wearing the monitor, it is recommended to keep a diary of your activities and symptoms (i.e., palpitations, shortness of breath, chest pains, etc.). You will then be asked to return the next day (approximately the same time), and the monitor will be removed. Your monitor data will be scanned on a computer and reviewed and interpreted by a technician. No special preparation is required for this monitor. Hook up takes about 15 minutes.

Home Sleep Test (HST): Is a device that you will use at night when you sleep. It is designed to give us quick results. This will help your doctor review your sleep patterns and make a diagnosis. We program the monitor and explain how to you it in office. No special preparation is required for this monitor. This will take about 15 minutes.

Heart Math Monitor (HM): HeartMath meditation is a heart-focused breathing meditation that can help you quickly change from feeling stressed to feeling calm. It can help lower your blood pressure and heart rate. We loan these monitors are to you to try for 30 days or you can purchase from heartmath.com. No special preparation is required for this monitor. It takes about 15 minutes to explain how to use it in the office or over the phone.

Metabolic Stress Test (MST): The metabolic stress test involves exercising on a treadmill or stationary cycle while you are closely monitored and breathing through a mouthpiece. The metabolic stress test measures the performance of the heart and lungs while they are under physical stress. If you have shortness of breath or chronic fatigue, the metabolic stress test can determine if your symptoms are due to a medical problem (such as heart or lung disease) or due to poor fitness. The test is also used to assess how fit your heart and lungs are, measure your heart's ability to do work (functional capacity), determine if certain surgical treatments are appropriate for you, evaluate the effectiveness of your cardiac treatment plan, help you develop a safe and effective exercise program. Please wear or bring comfortable clothes and shoes suitable for walking. You will be encouraged to exercise until you are exhausted. It is normal for your heart rate, blood pressure, breathing rate and perspiration to increase. You may also have a dry mouth from breathing through the mouthpiece. The appointment will take about 60 minutes. The actual exercise time is usually between 5 and 12 minutes.

MUGA Scan: A MUGA scan, which stands for "multiple gated acquisition," is a nuclear-medicine test that allows your doctor to see if your heart is beating properly. In a MUGA scan, a radioactive substance called Technetium 99 is injected into the bloodstream. This substance attaches to red blood cells, and it can be viewed through the body using a special camera that ultimately produces a moving image of the beating heart.



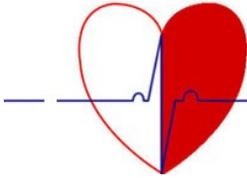
The Heartbeat Clinic

Amer Suleman M.D

A MUGA scan allows your doctor to measure how much blood is pumped by the heart with each heartbeat. This measurement, called the left ventricular ejection fraction (LVEF) is a good measurement of overall heart function. This procedure takes approximately 2 hours.

Nerve Conduction Study (NCV): A NCV measures how well and how fast the nerves can send electrical signals. If you have leg pain or numbness, you may have these tests to find out how much your nerves are being affected. These tests check how well your spinal cord, nerve roots, and nerves and muscles that control your legs are working. Wear loose-fitting clothing so your muscles and nerves can be tested. You may be given a hospital gown to wear. Do not use lotion day of test. This procedure takes approximately 30 minutes.

Nuclear Stress Test (Walking/Lexiscan): Nuclear medicine is a medical specialty that uses safe, painless, cost-effective techniques to document the structure and function of organs inside the body. Nuclear medicine is used in the diagnosis and management of diseases. Nuclear medicine uses a very small amount of radioactive materials-called radiopharmaceuticals-to diagnose and treat disease. The radiopharmaceuticals emit gamma rays that can be detected externally by a special type of camera. These cameras work in conjunction with computers to form images that provide data and information about the area of the body being imaged. A nuclear-medicine study is used to evaluate the adequacy of blood supply to the heart muscle. It is like a routine cardiac stress test, but it also includes the injection of a radioactive tracer into the bloodstream, which enables the doctor to see more detailed information about blood flow within the heart. This test is also sometimes called a Cardiolite stress test. The test will take 2 hours. Wear comfortable clothes and walking shoes. Do not eat or drink anything with caffeine for 24 hours prior to the test. This includes coffee, cola, teas, chocolate milk, chocolate pudding and chocolate candy. This also includes decaffeinated coffee, cola, and tea because these beverages still contain some caffeine. Do not eat or drink anything for at least 4 hours before the test. Remain on all medications unless otherwise directed by your physician. Bring a list of these medications with you. This test may not be appropriate if you are pregnant, suspect you may be, or are a nursing mother. Please discuss this with your doctor before having this test. An IV will be started for this procedure. You will be asked to sign a consent form for the exercise part of the test. Please read the form carefully. If you have any questions, do not hesitate to ask. A technician will explain the entire procedure before beginning the test. Several adhesive patches, called electrodes, will be placed on your chest. These will be connected to an electrocardiographic (EKG) monitor so that your heart rate and rhythm can be watched closely throughout the test. An intravenous line will be inserted in your arm. This will be used to inject the radioisotope tracer at maximum exercise. The IV will be removed after completion of the test. If your stress test is walking, then you will exercise by walking on a treadmill. This treadmill will be started at a very slow speed, and as the myocardial perfusion test proceeds, the speed and the incline of the treadmill will gradually increase. As exercise increases, your heart rate and blood pressure will rise, this is normal. Your heart rate, blood pressure and EKG will be monitored throughout the test. If you are unable to exercise on a treadmill, you may be given a drug called Lexiscan, which will increase your heart rate without exercise. You will be carefully monitored during the test. To increase the effectiveness of the test, it is important to exercise as much as you can. If you experience any unusual symptoms, such as chest pain or arm pain, shortness of breath or lightheadedness, you should tell the technician right away. Depending on your symptoms, blood pressure, EKG or the degree of fatigue you develop, adjustment will be made to the exercise portion of the test. One minute prior to the end of exercise, the radioisotope tracer will be injected through the IV line. As the tracer enters the bloodstream, it is carried directly to the heart. The tracer will be visualized by a special camera that can detect radiation. Your EKG, heart rate and blood pressure will be monitored for a few minutes after the exercise portion of the test is completed.



The Heartbeat Clinic

Amer Suleman M.D

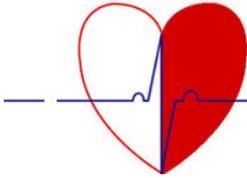
The technologist will position you under the camera and begin taking pictures. You will be lying on your back with your left arm over your head. The camera will be moved very close to your chest. Each picture will take about five minutes. During the procedure, the camera moves slowly around your chest in an arc-like fashion. The camera will acquire an image for 30 to 45 seconds and then it will move. The entire procedure will last approximately 20 minutes. It is very important to lie completely still while the pictures are being taken. After the first set of images has been completed, you will undergo a stress test and then return for a second set of images. This will allow the doctor to compare your heart under stress and at rest. The technologist will inform you about restrictions between the two sets of pictures.

Patent Foramen Ovale (PFO) Study: A PFO is a hole in the heart that didn't close the way it should after birth. The condition is relatively common. During fetal development, a small flap-like opening — the foramen ovale is usually present between the right and left upper chambers of the heart. It normally closes within the first or second year of life. When the foramen ovale doesn't close, it's called a PFO. Most people with a patent foramen ovale don't know they have it because it's usually a hidden condition that doesn't create signs or symptoms. With this approach a sterile salt solution is shaken until tiny bubbles form and then is injected into a vein through an IV. The bubbles travel to the right side of your heart and appear on the scan. If there's no hole between the left atrium and right atrium, the bubbles will simply be filtered out in the lungs. If you have a PFO, some bubbles will appear on the left side of the heart. No special preparation is required for this examination. This procedure takes approximately 30 minutes.

Pulmonary Function Test (PFT): A PFT is used to evaluate the respiratory system. A pulmonary function test can identify the severity of pulmonary impairment or reason for shortness of breath. Pulmonary function tests are a group of tests that measure how well the lungs take in and release air and how well they move gases such as oxygen from the atmosphere into the body's circulation. You are sitting for this test; you breathe into a mouthpiece that is connected to an instrument called a spirometer. The spirometer records the amount and the rate of air that you breathe in and out over a period. Do not eat a heavy meal before the test. This procedure takes approximately 45 minutes.

Quantitative Sensation Test (QST): QST assesses the small nerve endings that detect changes in temperature, and the large nerve endings that detect vibration. The testing involves a computer system that delivers mild stimulation, such as coolness or vibration, of known and reproducible quantities and duration. In a quiet room, the patient is asked if he or she can detect the changes in temperature or vibration which are transmitted to a finger or toe. The computer compares the patient's results to "normal" results, and a physician studies the analysis to diagnose or assess the patient's condition. QST is useful in diagnosing neuropathies, especially those involving small nerve fibers, and it may be used to detect whether a neuropathy is getting better or worse. No special preparation is required for this test. The procedure takes approximately 30 minutes.

Q-Sweat (QSART): Diagnose neuropathy when nerve conduction test results are normal, disturbances of the autonomic nervous system, or/and reflex sympathetic dystrophy. You will have four electrodes hooked up for the test. The test site is usually on the patient's foot, leg, or forearm. A capsule is placed over the skin on the test site. The technologist stimulates a nearby sweat gland by delivering a chemical through the skin, electrically. The patient feels warmth, but no electric shock. The effect of the chemical lasts for approximately five minutes. During the test, the amount of sweat under the capsule is measured at various times. A computer analyzes the results, determining how well the sweat gland functions and how well the nerves functioned to help the gland release sweat at a "normal" time. The procedure takes approximately 30 minutes. You will be asked to



The Heartbeat Clinic

Amer Suleman M.D

pick up medication same day as test from next door at McKinney Care Pharmacy.

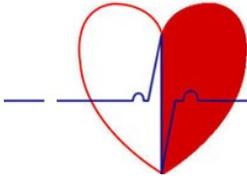
Renal Doppler: Renal doppler is a kidney ultrasound is a noninvasive procedure used to assess the size, shape, and location of the kidneys. Ultrasound may also be used to assess blood flow to the kidneys. Ultrasound can detect cysts, tumors, abscesses, obstructions, fluid collection, and infection within or around the kidneys. You will need to be 4 hours fasting. The procedure takes approximately 45 mins.

Signal-Average Electrocardiogram (SA EKG): A SA is a special electrocardiographic technique, in which multiple electric signals from the heart are averaged to remove interference and reveal small variations in the QRS complex, usually the so-called "late potentials". These may represent a predisposition towards potentially dangerous ventricular tachyarrhythmia's. It is performed like a regular EKG but with 4 extra leads. Dress comfortably for this test. The procedure takes approximately 30 minutes.

Stress Echo: An exercise echocardiogram stress test combines an ultrasound study (echocardiogram) of the heart with exercise to learn how the heart functions when under stress. This test helps show areas of the heart that are not getting enough blood. During an echocardiogram, a transducer (a small microphone-like device) is held against your chest and takes pictures of your heart. These pictures can be recorded on videotape or printed on paper. Wear comfortable clothes and walking shoes. Before taking the test, you will need to have nothing too heavy to eat. You can eat a light meal before the test is performed. If you usually have nausea with your symptoms, then it recommended to be fasting. Remain on all medications unless otherwise directed by your physician. This test may not be appropriate if you are pregnant or suspect you may be. Please discuss this with your doctor before having this test. Electrodes will be placed on your chest to monitor your heart rate. A cuff will be put on your arm to check your blood pressure. There are three parts to this procedure. Resting echocardiogram: You will be asked to lie on a stretcher. Gel will be put on the left side of your chest, and ultrasound will be used to take pictures of the heart at rest. Exercise test: You will walk on a treadmill. The treadmill will move slowly at first, and then the speed and incline will increase a little at a time. Tell the doctor if you have chest pain, shortness of breath, leg fatigue or dizziness. The doctor may end the test when you reach your peak heart rate, when you get too tired or when you experience symptoms. After-exercise echocardiogram: You will be helped back to the stretcher. Another echocardiogram will be done. Your doctor can compare the two sets of pictures (before and after exercise) to see how your heart responds to the stress of exercise. This procedure takes approximately 75 minutes.

Tilt Tablet Test: Often used to diagnose dysautonomia, POTS or syncope. Patients with symptoms of dizziness or lightheadedness, with or without a loss of consciousness (fainting), suspected to be associated with a drop in blood pressure or positional tachycardia are good candidates for this test. The procedure tests for causes of syncope by attempting to cause syncope by having the patient lie flat on a special table or bed while connected to ECG and blood pressure monitors. The table then creates a change in posture from lying to standing. Before taking the test, you will need to have nothing too heavy to eat. You can eat a light meal before the test is performed. If you usually have nausea with your symptoms, then it recommended to be fasting. Dress comfortably for this test. This procedure takes approximately 60 minutes.

Thoracic Outlet Syndrome Ultrasound (TOS): This test is to assess blood flow in the arteries in the thoracic outlet. This helps the doctor to identify any blockages or compression you may have. No special preparation is required. The test takes about 45 minutes.



The Heartbeat Clinic

Amer Suleman M.D

Transcranial Doppler (TCD): A TCD measures the velocity of blood flow through the brain's blood vessels through an ultrasound. A TCD can be used to help in the diagnosis of emboli, stenosis, or vasospasm. It is commonly ordered in patients with dizziness or syncope. This procedure takes approximately 15 minutes.

Venous Doppler of Lower Extremity: The purpose of a venous duplex scan is to detect the presence of thrombus (blood clot) in your veins. Some indications for a lower-extremity venous scan include warmth, pain and swelling of one or both legs, or ulcers of legs. A water-based gel will be applied to your legs, and images of your veins and the sound of blood flow within them will be recorded using ultrasound. This study can also be performed on the upper extremities if needed. This examination is usually painless, although you may feel some discomfort if your leg is tender. No special preparation is required. This procedure is painless and takes approximately 30 minutes.

Venous Doppler: This doppler is a diagnostic test used to check the circulation in the large veins in the legs (or sometimes the arms). There is no special preparation required. This procedure is painless and takes approximately 30 minutes.

Videonystagmography (VNG): The purpose for a VNG is to test the inner ear and central motor functions. VNG testing is used to determine if a vestibular (inner ear) disease may be causing a balance or dizziness problem and is one of the only tests available today that can decipher between a unilateral (one ear) and bilateral (both ears) vestibular loss. VNG testing is a series of tests designed to document a person's ability to follow visual objects with their eyes and how well the eyes respond to information from the vestibular system. VNG testing is non-invasive, and only minor discomfort is felt by the patients during testing because of wearing goggles. The only prep for this test is to wear no eye make up. The procedure takes approximately 1 hour.

Zio Patch: Zio is an ambulatory cardiac monitoring. It is a 14-day monitor that will stick to your chest. Takes about 15 minutes to hook up in the office or we can mail to you to hook up at home.