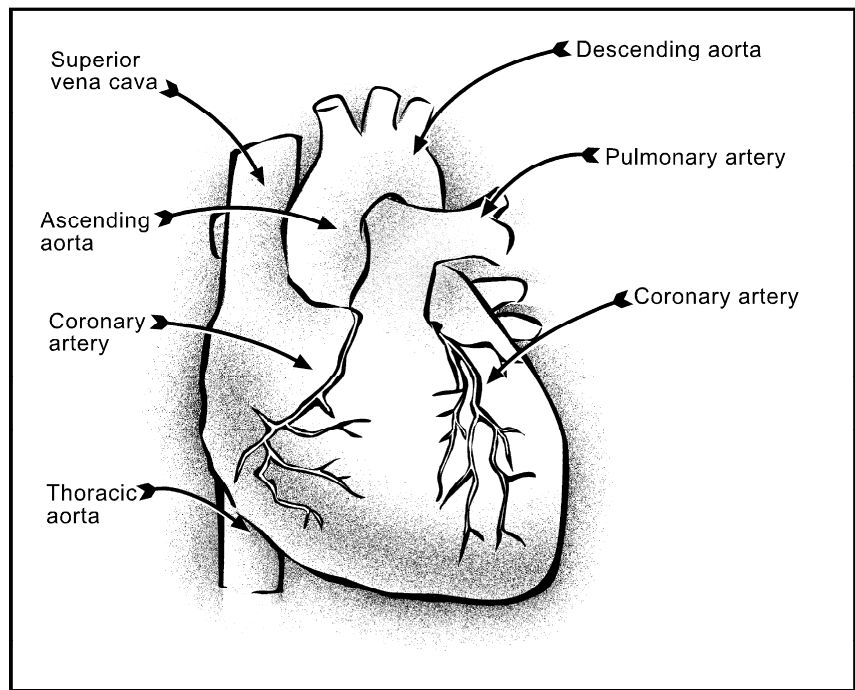




Heart Disease





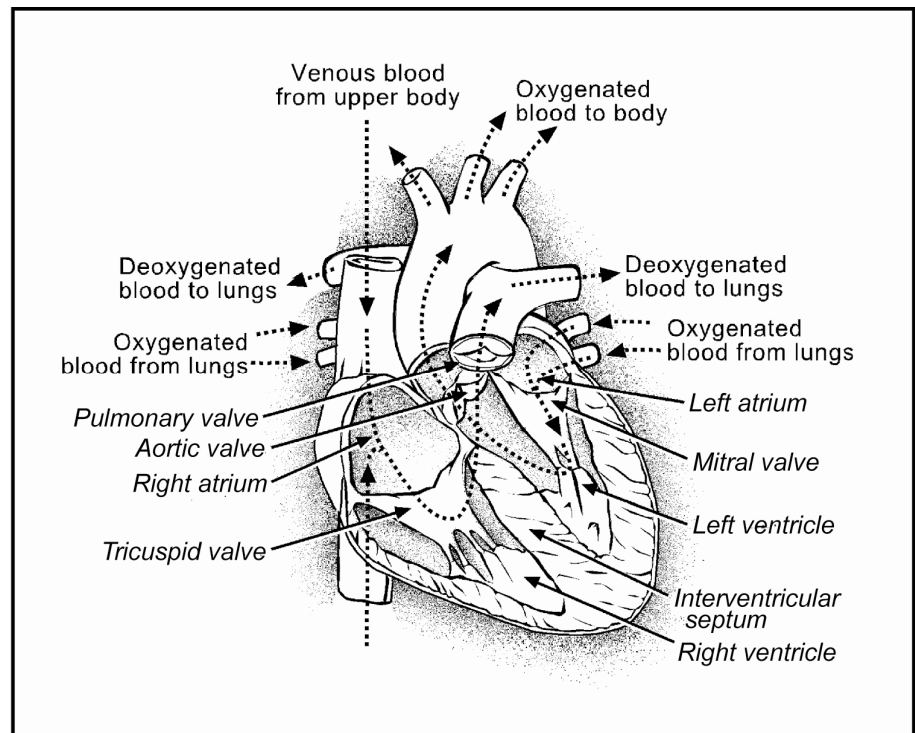
Heart Disease

This manual describes heart disease, including:

- The structure and function of the heart.
- Types of heart disease.
- Risk factors.
- Types of heart tests.
- Resources to help you learn more.

Structure and Function of the Heart

The heart is a muscle. It is a pump with 4 chambers, each about the size of a fist. Its main function is to supply oxygen-rich blood from the lungs to all parts of the body. The heart, which lies slightly to the left of center in the chest, pumps about 5 quarts of blood each minute. It is protected by the sternum (breastbone) and rib cage. The two collecting chambers on top are called the *atria*. The lower pumping chambers are called the *ventricles*. The heart has 4 one-way valves that keep blood flowing in the correct direction.



Blood flow through the chambers of the heart.

Veins bring blood from throughout the body to the right atrium. The blood flows from the right atrium to the right ventricle and is pumped to the lungs. In the lungs, carbon dioxide is removed and replaced with oxygen. The blood comes back to the heart into the left atrium, flows to the left ventricle and then is pumped into the aorta. Arteries carry this oxygen-rich blood to the rest of the body.

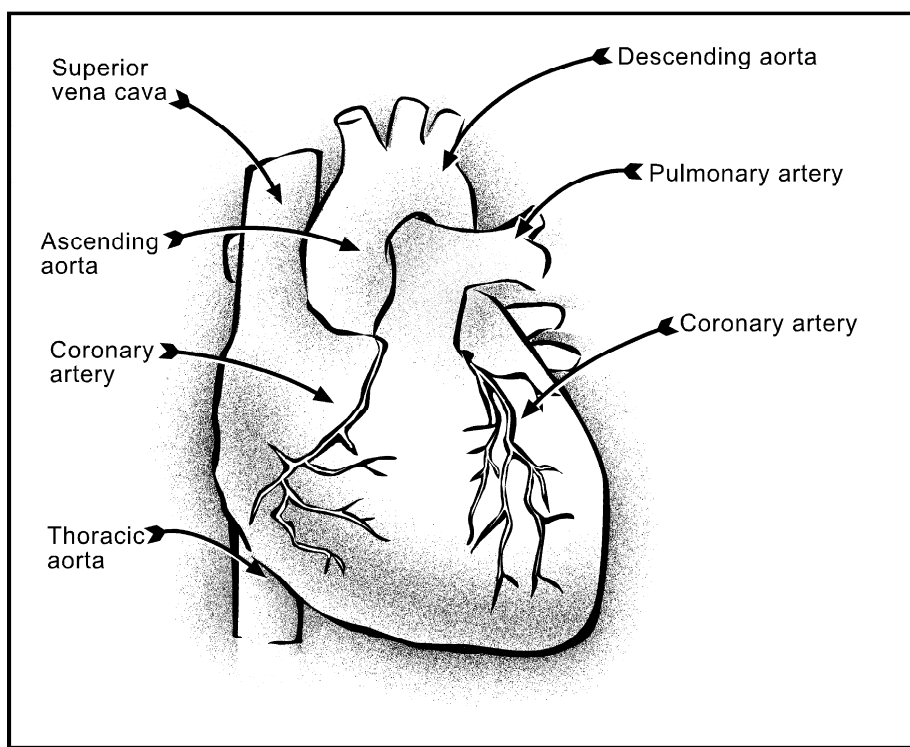
For the heart to do its work, it needs an electrical impulse to generate a heartbeat. Special cells in the heart send out electrical currents that stimulate the heart muscle and cause it to contract. Steady electrical signals are produced by your heart's "natural pacemaker," the *sinoatrial* (SA) node.

The SA node is in the upper right chamber of the heart (right atrium). The electrical signal travels through the atria to an area in the middle of the heart called the *atrioventricular* (AV) node. Special pathways then carry the signal from the AV node to all parts of both ventricles, causing them to contract. This sequence of events is called *normal sinus rhythm*, and can be recorded during an electrocardiogram (ECG).

Normally, the heart beats 60 to 80 times per minute. The surge of blood with each beat is felt as a pulse. At times, the heart's electrical system may develop a problem that prevents the electrical signals from regularly reaching the pumping chambers or that causes the signals to be delayed or erratic. Abnormal rhythms such as these are referred to as "arrhythmias."

The heart muscle needs oxygen and nutrients. The heart receives its nourishment from a system of arteries called the *coronary arteries*. They branch and divide so that the entire heart muscle is provided with oxygen-rich blood.

The right coronary artery supplies blood to the right side of the heart. The left coronary artery has 2 main branches – one extending to the front, the other to the back of the heart. Coronary artery disease (CAD) occurs when the coronary arteries become blocked, which can cause angina or heart attacks.



The arteries of the heart.

Coronary Artery Disease

Coronary artery disease (also called *coronary atherosclerosis* or *ischemic heart disease*) refers to changes or processes that occur in the coronary arteries that restrict oxygen supply to the heart muscle. This is a slowly progressive disease in which the inner layer of the artery becomes thickened and irregular, developing deposits of cholesterol and calcium.

These deposits are called *plaque*. As the plaque accumulates, the artery narrows. This process causes obstruction of the normal blood flow. A spasm in the wall of the artery may also cause the blood vessel to narrow. Narrowing or obstruction of a coronary artery from either a spasm or plaque can result in ischemia, which is a temporary decrease in the supply of oxygen-rich blood to a portion of the heart muscle.

The most common symptom of coronary artery disease is *angina pectoris*. Angina pectoris is a recurring discomfort often felt in the chest but, at times, in the neck, arms, back, or jaw. This discomfort is often described as “pressure” or “tightness,” and can vary from a mild ache to a severe crushing feeling throughout the chest.

Angina can occur during exercise, exposure to cold, after a heavy meal, with emotional stress, or with fatigue. Heart rate and blood pressure increase because the heart muscle needs more oxygen than the partially blocked coronary artery can supply. Angina usually lasts only a few minutes and is often relieved by resting, or by taking nitroglycerin. Nitroglycerin quickly expands the coronary arteries and increases the blood supply to the heart.

Chest pain that is brought on by physical exertion or emotional stress, but goes away with rest, is called *stable angina*. Chest pain that occurs at rest, lasts longer than a few minutes, or comes on with increasing or unpredictable frequency, is called *unstable angina*.

Treatment for angina includes medicines, procedures such as balloon and laser angioplasty, atherectomy, coronary stent placement, and coronary artery bypass graft (CABG) surgery.

Heart Attack

A heart attack occurs when blood supply to the heart is suddenly blocked. This results in injury to the heart muscle. This is also known as *acute coronary syndrome*.

Coronary atherosclerosis is linked with heart attacks. Atherosclerosis is a disease in which deposits of cholesterol and other fatty substances begin to line the inner walls of arteries. This is commonly called plaque. For unexplained reasons, this plaque may burst and cause a blood clot to be formed. The clot stops the blood flow, heart tissue is permanently damaged, and a heart attack results.

When you have a heart attack, part of your heart muscle dies because the supply of blood and oxygen is stopped or severely reduced. The heart muscle surrounding this area may be injured as well. Some of your heart's ability to pump effectively will be reduced in a heart attack. The more extensive the heart damage, the more loss in normal heart function.

As the damaged part of your heart heals, scar tissue forms to reinforce the area. The healing process takes about 4 to 6 weeks, but it will depend on the extent of heart injury and how fast you heal. Some people may need angioplasty, coronary stents, or coronary artery bypass graft surgery to help restore blood flow to certain areas of the heart.

During the first few days after a heart attack, your activity will be restricted while you are in the hospital. After that, activity is limited until your heart has had time to heal. After a heart attack, most people can resume their normal activities within a few weeks to months.

Some symptoms that may occur with a heart attack include:

- Pain or unexplained discomfort in the chest, jaw, shoulders, arms, or upper abdomen.
- Sweating.
- Shortness of breath.
- Nausea.
- Light-headedness.

Heart attacks can occur suddenly, and at any time or place. Most people do feel some or all symptoms of a heart attack, but one can occur with no symptoms at all.

These symptoms can be quite severe in some, or mild and/or intermittent in others. If any or all of these symptoms are present, help should be obtained right away. Minutes count and can mean the difference between life and death.

About 30% of people who have heart attacks die from them before they even reach the hospital because they delay calling for help. Early treatment can increase the chances of surviving a heart attack and can help to prevent extensive damage to the heart muscle.

When your heart is damaged, it is prone to develop abnormal heart rhythms (*arrhythmias*). The most serious of these arrhythmias is *ventricular fibrillation* (VF), in which the heart stops pumping blood. While you are in the hospital, your heart rhythm can be closely monitored, and a “shock” can be given to restore normal heart rhythm should VF occur.

There are medical treatments that can decrease the amount of permanent damage to the heart during a heart attack. In some patients, clot-dissolving medicines can be infused to restore blood flow (*thrombolytic therapy*). *Percutaneous transluminal coronary angioplasty* (PTCA) or *balloon angioplasty* can be used to increase blood flow to the affected part of the heart. Coronary stents can also be implanted to help keep the coronary arteries open. These treatments are most effective if they are used in the first hour or two. Seek medical attention right away if you experience any symptoms that may be associated with a heart attack.

Cardiac Risk Factors

Coronary heart disease (CAD) is a slowly progressive disease. Many factors have been shown to increase a person's risk of developing CAD. Controlling these factors may help slow the progress of the disease. Know these risk factors and know what you can do to keep them under control.

Risks for CAD can be grouped into 2 categories: controllable and uncontrollable.

These risks for CAD cannot be controlled:

- Family history of CAD
- Male gender

Family History/Heredit

Some people develop CAD during young adulthood. The reason for this isn't clear. If heart disease runs in your family, identify other risk factors you may have that can be controlled, such as smoking or stress. Encourage other family members to do the same, so intervention can start before problems arise.

Male Gender

Men have a higher incidence of heart disease than women. However, when women reach menopause, their incidence increases due to hormonal changes. Although many people do not realize it, heart disease is the most common cause of death in women.

These risk factors for CAD can be controlled:

- Smoking
- High blood pressure
- Elevated blood cholesterol
- Diabetes
- Stress/"Type A" personality
- Weight
- Sedentary lifestyle

Smoking

Smoking is the top risk factor for coronary artery disease for most people. It doubles a person's risk for having a heart attack and increases the risk of developing pneumonia, emphysema, lung cancer, and other respiratory diseases.

Quitting smoking is the single most important thing you can do for your heart and lungs. Recent studies show that exposure to second-hand smoke also puts non-smokers at risk for developing lung cancer and other respiratory illnesses.

When you stop smoking, your body starts to repair itself, unless there is irreversible damage. Your risk for heart disease decreases the day you quit and becomes similar to that of nonsmokers within 3 to 5 years.

Some ways smoking harms the heart:

- Reduces oxygen to the heart muscle.
- Causes narrowing and spasm of the arteries, which leads to increased blood pressure and heart rate, both of which cause the heart to work harder.
- Increases chance of blood clots.
- Negatively affects the blood cholesterol levels.

Benefits of quitting smoking:

- Decreased chance of developing heart disease, lung disease, and cancer.
- Improved sense of taste and smell.
- Increased energy level.
- Your house and clothes won't smell of smoke.
- Your teeth and hands will be cleaner.
- You will save money.

Tips to Quit Smoking

- **Resolve to give up smoking forever.** A “cold turkey” method often works best. A gradual approach is fine, as long as you don't procrastinate.
- **Set a quit date and stick to it.** Tell your family and friends about your decision.
- **Remove all cigarettes (and/or pipes, cigars), lighters, and ashtrays from your home and car.** Getting your car “detailed” will help remove the smell of smoke.
- **Develop a non-smoking environment around you.** Stay away from places or situations you associate with smoking.

- **Drink large quantities of water and fruit juice.** This helps eliminate the nicotine from your body.
- **Avoid caffeine** if drinking coffee is a habit linked to smoking.
- **If you miss the feel of having something in your hand,** hold something else such as a pencil or paper clip.
- **If you miss having something in your mouth,** try toothpicks, hard candy, carrot sticks, apples, or gum.
- **Relieve tension** by deep breathing, exercise, or taking a warm bath.
- **Save the money you would have spent on tobacco** and treat yourself to something special.
- **Most of all, don't think "just one won't hurt," because it will.**

If you would like to learn more or need help to quit smoking, programs are offered through the American Cancer Society. Call 206-283-1152 in Seattle, or toll-free 800-227-2345. Or, ask your nurse for a copy of the UWMC handout "Resources to Quit Smoking or Using Tobacco."

High Blood Pressure

As blood is pumped through the arteries, it pushes against the arterial walls. This force against the artery wall is called *blood pressure*. High blood pressure, also called *hypertension*, is a risk factor for coronary artery disease.

Your blood pressure is composed of two numbers – such as 120/80. The top number is the *systolic pressure*. It represents the pressure in your arteries after the heart has pumped a new surge of blood.

The bottom number is the *diastolic pressure*. This is the pressure in your arteries while your heart is at rest before the heart beats again. The harder it is for blood to flow through your vessels, the higher both numbers will be, and the greater the strain on your heart.

Acceptable blood pressure falls within a range. For most adults, a blood pressure reading that is less than 120/80 is considered acceptable. If you're an adult and your systolic pressure is 120 to 139, or your diastolic pressure is 80 to 89, or if both are true, then you have "prehypertension." High blood pressure is a pressure of 140 systolic or higher and/or 90 diastolic or higher, which stays high over time.

Abnormal elevation of either the systolic or diastolic pressure adds to the workload of the heart, increasing a person's risk of developing CAD. Even mild elevations can be very damaging. High blood pressure may have no symptoms, so once it has been diagnosed, it must be monitored and treated for life.

About 90% of high blood pressure has no known cause. There are many steps that can be taken to control high blood pressure:

- Control your weight.
- Quit smoking.
- Exercise regularly.
- Eat a low-sodium (low-salt) diet.
- Manage your stress.
- Have your blood pressure checked regularly.
- If your doctor has prescribed medicine for you, take it as directed.

Cholesterol

People with high cholesterol have an increased risk of developing CAD. The liver produces all the cholesterol the body needs to function. When you eat food high in cholesterol, your body gets more than it needs. When this happens, your body may build up fatty substances, known as plaque, inside your artery walls. The plaque gradually clogs the flow of blood to your heart.

Know your cholesterol level. A blood test will show your level. To get an accurate reading, you should not have anything to eat or drink (except water) for 12 hours before the blood draw.

The blood test will give a total cholesterol level. Ideally, your total cholesterol level should be less than 200. The test will also show your low density lipoprotein (LDL) and high density lipoprotein (HDL) cholesterol levels.

LDL, known as “bad” cholesterol, is thought to increase fat buildup and cholesterol inside blood vessel walls. Ideally, for people with coronary artery disease, LDL should be less than or equal to 110.

HDL, known as “good” cholesterol, is believed to remove fat and cholesterol from the bloodstream and artery walls and return them to the liver for disposal. Higher blood levels of HDL are usually found in people who exercise, maintain a healthy weight, and don’t smoke. Ideally, one’s HDL level should be greater than or equal to 40.

Treatment for elevated cholesterol levels usually starts with nutritional counseling. Reducing your total fat, saturated fat, and cholesterol intake is sensible and can help reduce your risk of heart disease.

Your cholesterol level should be checked every 1 to 3 months after dietary changes have been made. If your levels are still elevated, cholesterol-reducing medicine may be prescribed by your doctor.

Diabetes

Diabetes is a risk factor for CAD. The exact mechanism for developing coronary artery disease is not well understood. It is known, however, that having diabetes for years damages large and small blood vessels.

A person with diabetes has a much greater risk of developing heart disease if he or she also has other risk factors.

People with diabetes may be able to decrease their risk for heart disease by eating a low-fat diet, controlling their weight, and quitting smoking.

Stress/“Type A” Personality

There is strong evidence to suggest that one’s personality may be a risk factor for CAD. People with “Type A” personalities may be:

- Competitive
- Time-conscious
- Impatient
- Aggressive
- Abrupt
- Highly motivated
- Tense
- Highly successful
- Reluctant to relax, due to guilt
- Always in a hurry

“Type A” personality often results in increased emotional stress and tension, which in turn causes the body to produce adrenaline. This makes the heart pump faster and harder, causing the blood vessels to clamp down or narrow. Also, tension may create high blood pressure and raise blood cholesterol during stressful periods.

Changing “Type A” Personality

Recognize your body’s signals of stress – stiff, tight shoulder or neck muscles, “butterflies” in your stomach, acid stomach, etc. When you experience these signals, consciously turn them off through relaxation or imagery.

- Identify and try to reduce the things in your environment that cause you stress.
- Maintain a balance of work, play, and rest in your life.

- Engage in regular exercise – at least 3 times per week.
- Consider meditation or relaxation training.
- Set small, concrete goals. Work on 1 goal at a time.
- Avoid hurrying. Adopt a leisurely pace.
- Do 1 activity at a time and leave some time for yourself.

Learn more about relaxation and reducing stress. Classes and seminars are offered through colleges and organizations such as the American Heart Association, 206-632-6881.

Weight

Being overweight can contribute to your risk for CAD and can also contribute to other risks, including high blood pressure, diabetes, and elevated blood cholesterol. Excess weight also makes the heart work harder and may result in skeletal injuries due to stress and strain.

Achieving and maintaining an ideal weight is an important step in controlling your risks. The keys to weight control are moderation, variety, exercise, and willpower.

When losing weight, do so gradually. Long-term success depends on acquiring new and better eating habits. Eat in moderation. Include a variety of foods that contain all the necessary nutrients.

Avoid crash diets – those restricting you to fewer than 1,000 calories per day. A steady loss of 1 to 2 pounds a week is safe and more likely to be maintained. You may want to work with a dietitian to develop a calorie-restriction plan that is right for you.

Gradually increase daily physical activities. When you are ready, begin regular aerobic exercise such as walking or swimming. A long-term exercise program is crucial to weight loss and maintenance. Check with your doctor before starting any exercise program to be sure it is right for you.

Tips for Losing Weight

1. Increase physical activity.
2. Eat less fat and fatty foods.
3. Eat less sugar and sweets.
4. Avoid alcohol.

Reward yourself for weight loss with items other than food. New clothes, a movie, or a trip are a few suggestions.

Sedentary Lifestyle

A sedentary lifestyle is one in which a person gets little or no physical activity in his or her work or leisure time. Such people are more likely to suffer angina and have a heart attack if they also have other risk factors. Regular, sustained exercise can help decrease the workload on your heart. As your body becomes conditioned, your heart will perform more effectively. Other benefits include:

- Improved circulation.
- Enhanced joint mobility and muscle tone.
- Increased strength and endurance.
- Improved blood cholesterol levels.
- Weight loss.
- Improved blood pressure.
- Greater ability to handle stress.
- Release of tension.
- Improved feeling of well-being.
- Decreased stress/depression.

Regular exercise generally means performing an activity for 20 to 30 minutes, 3 to 4 times per week. Talk with your doctor about your exercise program and gradually work up to the recommended exercise level.

Alcohol and Your Heart

Many people wonder if drinking alcohol is safe for those with heart disease. Alcohol can have varying effects on the heart, depending on your specific problem. It is best to direct any questions you may have about drinking to your doctor.

Excessive alcohol intake has been shown to cause increased risk of hypertension, stroke, cancer, and cirrhosis of the liver. It can also damage the heart muscle, causing conduction defects that lead to arrhythmias (disruptions in the normal, regular heartbeat).

Alcohol will increase your heart rate and slightly decrease the strength of your heart muscle's contraction. This is why you should avoid exercise or other strenuous activity after drinking.

Cardiac Tests

Cardiac Catheterization (Coronary Angiography)

Description: This test is used to check the coronary arteries, which supply blood to the heart muscle. A catheter (narrow tube) is inserted into an artery in the groin or arm, and is carefully guided to the heart with the use of a fluoroscope (X-ray machine). Contrast dye is injected through the catheter into the coronary arteries and their images are recorded on film. These images show the arteries that are narrowed or blocked.

Takes About: 1 to 3 hours. Requires special instructions as well as your written consent.

Place Done: Cardiac Cath Lab.

Coronary Computed Tomography Angiogram (Coronary CTA)

Description: This procedure studies the inside of your tiny heart vessels without physically going inside your heart. The computer tomography (CT) scanner can scan the entire heart during only 5 beats. A radiologist and a technologist will give you a non-toxic contrast through an IV into your vein. When the contrast reaches your heart vessels, the CT scanner takes thousands of pictures in a very short time. The images are then pieced together and the radiologist is able to evaluate them for blockage of an artery.

Takes About: 30 minutes.

Place Done: Radiology.

Electrocardiogram (ECG, EKG, 12 Lead)

Description: An ECG is a recording of your heart's electrical function. Electrode patches are attached to each wrist and ankle, and at six points on your chest. A recording is then made, giving your doctor 12 views of your heart's electrical activity. This way, your doctor can tell if the heart is experiencing any irregularities, stress, or damage.

Takes About: 5 to 10 minutes. Requires no special preparation.

Place Done: Bedside or Regional Heart Center.

Echocardiogram (Echo, Cardiac Ultrasound)

Description: Images of the heart are produced by using sound waves generated from a small device (transducer) held to your chest. The sound waves are bounced off the heart structures and sent back to a screen, where they are recorded on film. These images help to identify abnormalities of the heart muscle or heart valves, and to detect the presence of fluid around the heart.

Takes About: 30 minutes to 1 hour.

Place Done: Bedside or Regional Heart Center.

Electrophysiology Study (EP Study, EPS)

Description: This test is used to provide more precise information about the electrical function of your heart, and is performed by a specially trained cardiologist. A catheter (narrow tube) is inserted into an artery in the groin and carefully guided to the heart using a fluoroscope (X-ray machine). Once the catheter is in place, measurements of your heart's electrical activity will begin.

Takes About: 2 to 4 hours. Special instructions are required before and after this procedure, as well as your written consent.

Place Done: EP Lab, 2nd floor.

Holter Monitor (Ambulatory Monitor)

Description: This device records your heart's electrical activity over a period of time, and may be worn at home or in the hospital. Electrode patches are placed on your chest, with wires going to a small recorder (about the size of a small, portable tape recorder), which is worn with a shoulder or belt strap.

Takes About: You will be asked to keep a diary of daily activities, symptoms, and medicines taken during the recording period so that any abnormal rhythms found can be related to particular activities.

Place Done: Regional Heart Center.

Magnetic Resonance Imaging (MRI) Cardiac Scan

Description: This scan uses radio waves and a strong magnetic field instead of X-rays to provide clear detailed pictures of the heart. An MRI exam typically consists of 2 to 6 sequences of pictures, each lasting 2 to 15 minutes. Each sequence shows a cross-section of the heart.

Takes About: 30 minutes to 1 hour.

Place Done: Radiology.

Radionuclide Ventriculogram (RNVG), Multi-gated Analysis (MUGA), Cardiac Nuclear Medicine Exam

Description: These tests provide information about the pumping ability of your heart. A very small amount of radioactive material is injected into a vein. A special camera records the movement of the radioactive material through your heart with each heartbeat.

Takes About: 1 to 2 hours.

Place Done: Nuclear Medicine Department.

Pulmonary Function Test (PFT)

Description: This test is used to measure lung function. You will be asked to breathe in and out several times into a machine.

Takes About: 30 to 45 minutes.

Place Done: Pulmonary Function Lab.

Telemetry Monitoring

Description: By using radio signals, your heart's electrical activity is sent to a heart monitor at the nurses' station and sometimes into your room. Electrode patches placed on your chest are connected to a small battery-powered telemetry box (about the size of a transistor radio). This device, which is carried in a pouch around the neck or in a pocket, makes it possible to monitor your heart rhythm continuously while you gradually increase your activity.

Takes About: Taken continuously while hospitalized.

Place Done: Bedside.

Stress Tests

Stress tests are performed to diagnose coronary artery disease or angina. These are the types used most often:

Exercise Tolerance Test (ETT, Treadmill)

Description: This test is done to determine your exercise tolerance and any abnormal heart rhythms and/or inadequate blood flow to your heart during exercise. Electrode patches are placed on your chest and connected to a treadmill electrocardiogram (ECG) computer, which will record electrical signals from your heart during exercise. While you are walking and/or running on a treadmill, your ECG, blood pressure, and pulse are recorded.

Takes About: 45 minutes to 1 hour.

Place Done: Regional Heart Center.

Thallium Stress Test, Sestamibi Stress Tests, Persantine/Adenosine, Dobutamine Stress Test

Description: These tests compare the amount of blood flowing through the heart muscle during stress and at rest. Thallium and sestamibi stress tests involve walking and/or running on a treadmill. Persantine and dobutamine stress tests involve causing stress on the heart by giving one of the 2 medicines named, not by actual physical exercise. Both types of stress tests use radioactive scans to detect the presence and extent of coronary artery disease. Pictures of your heart will be taken about ½ to 1 hour after injection of a very small amount of radioactive materials while you are at rest, and again during exercise or medicine-induced stress. The exercise portion of the study may be done first.

Takes About: The scanning time (picture-taking) for all these procedures takes about ½ hour. The entire test can be completed over 1 to 2 days, and may require special instructions.

Place Done: Nuclear Medicine Department.

Stress Echocardiography Test (Exercise Echo, Dobutamine Echo)

Description: This test checks the function of the heart muscle at rest and under stress. When blood flow to the heart muscle is reduced, the motion of the heart muscle changes. These changes can be detected using echocardiography (see Echocardiogram). This test begins as an exercise tolerance test, either with actual physical exercise or intravenous (IV) administration of the medicine dobutamine to stress the heart muscle. Images of the heart will be recorded by the echocardiography technician before and after the stress portion of the test.

Takes About: 1½ hours.

Place Done: Regional Heart Center.

Resources to Learn More

There are many heart-healthy books that can help you increase physical activity, reduce stress, manage your weight, and improve your overall health. You can borrow them from the library, or buy them from a traditional or online bookseller.

Ask your provider to recommend specific books, as well as Web sites that may be helpful.

Books**Eating/Cooking/Weight Loss**

There are many excellent cookbooks and magazines about cooking light and eating well. Try titles by the American Heart Association, Dean Ornish, Joseph Piscatella, and Brenda Ponichtera. There are also many excellent resources listed in the UWMC publication *Heart Healthy Nutrition*.

Emotional Aspects

- *The Healing Heart* by Norman Cousins
- *Transitions: Making Sense of Life's Changes* by William Bridges

Exercise

- *Burning Fat, Getting Fit: Exercise and Your Heart, A Guide to Physical Activity* by the American Heart Association
- *Fitting in Fitness* by the American Heart Association

Sexuality

- *Heart Illness and Intimacy* by Wayne Sotile
- *The Sensuous Heart: Guidelines for Sex After a Heart Attack or Heart Surgery* by Suzanne Cambre

Questions?

Call 206-598-4300

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help at any time.

Regional Heart
Center/Cardiovascular
Clinic: 206-598-4300

Stress Management

- *Don't Sweat the Small Stuff* (any in the series) by Richard Carlson
- *The Relaxation Process* by Herbert Benson
- *The Relaxation and Stress Process* by Martha Davis, et. al.

Web Sites

American Heart Association

www.americanheart.org

This site provides links to dozens of other well-respected sites including extensive listings for government agencies, universities and research centers, scientific organizations, and other resources.

Harvard Heart Letter

www.health.harvard.edu

Recommended by UWMC clinicians, this site offers detailed information about many aspects of heart disease, rehabilitation, and a heart-healthy lifestyle. Click under "Newsletters" and then "Harvard Heart Letter."

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