

What You Need to Know About Ischemic Vascular Disease

Faculty Group Practice



Introduction

Ischemic Vascular Disease (IVD) is a term that includes a group of diseases caused by problems in blood circulation. People with IVD have a high risk for having heart attacks, angina, stroke and other life threatening conditions. The purpose of this booklet is to help you learn about IVD and the most effective ways to stop its progression and avoid medical emergencies, complications and disability. We hope this information and education will help you to work together with your health care provider on making informed decisions and achieving the best possible outcome.

Table of Contents

Introduction.....	2
What Is Ischemic Vascular Disease?	4
Coronary Heart Disease (CHD).....	5
Carotid Artery Disease (CAD).....	5
Peripheral Arterial Disease (PAD).....	6
What Causes Ischemic Vascular Disease?.....	6
Who Is at Risk for Ischemic Vascular Disease?.....	7
What Are the Signs and Symptoms of Ischemic Vascular Disease?.....	9
Coronary Arteries.....	10
Carotid Arteries.....	10
Peripheral Arteries.....	11
How Is Ischemic Vascular Disease Diagnosed?.....	12
Who will take care of my Vascular Ischemic Disease?.....	14
How Is Vascular Ischemic Disease Treated?.....	15
Living With Vascular Ischemic Disease.....	18
Pay attention to warning Signs.....	19
Heart attack warning Signs.....	20
Transient Ischemic Attack warning signs....	20
Stroke warning signs.....	21
In summary: Follow these Smart Steps:.....	22

What Is Ischemic Vascular Disease?

Ischemia means a "reduced blood supply". Ischemic Vascular Disease (IVD) is where a waxy substance called plaque (plak) builds up inside blood vessels, and restricts the normal flow of blood. This reduced blood flow can cause problems to many organs in the body

When plaque builds up in the arteries, the condition is called **atherosclerosis** (ATH-er-o-skler-O-sis). The buildup of plaque occurs over many years.

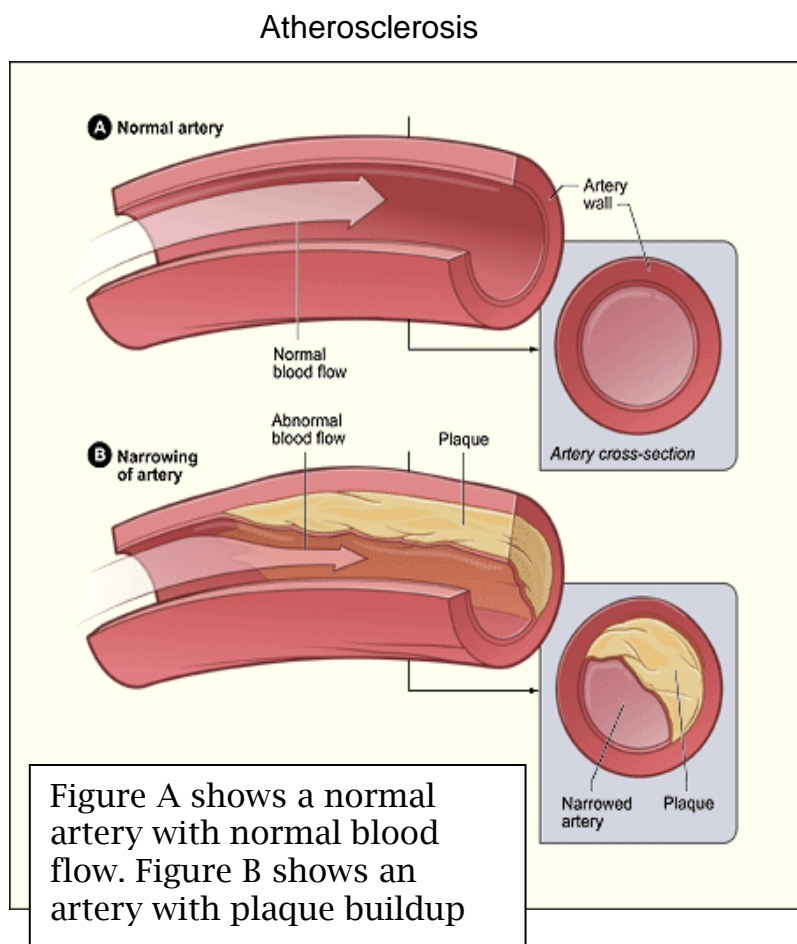
Over time, plaque hardens and narrows your arteries. This limits the flow of oxygen-rich blood to your heart muscle and/or brain.

Eventually, an area of plaque can rupture (break open). This causes a blood clot to form on the surface of the plaque. If the clot becomes large enough, it can mostly or completely block blood flow.

Atherosclerosis can affect any artery in the body, including arteries in the heart, brain, arms, legs, pelvis, and kidneys. As a

result, different diseases may develop based on which arteries are affected.

Ischemic Vascular Disease is a term that includes a group of diseases caused by the build-up of plaque.



Coronary Heart Disease (CHD)

Coronary heart disease is where atherosclerosis affects the coronary arteries in the heart.

If the flow of oxygen-rich blood to your heart muscle is reduced or blocked, angina (an-JI-nuh or AN-juh-nuh) or a heart attack may occur.

Angina is chest pain or discomfort. It may feel like pressure or squeezing in your chest. The pain also may occur in your shoulders, arms, neck, jaw, or back. Angina pain may even feel like indigestion.

A heart attack occurs if the flow of oxygen-rich blood to a section of heart muscle suddenly becomes blocked. If blood flow isn't restored quickly, the section of heart muscle begins to die. Without quick treatment, a heart attack can lead to serious problems and even death.

Over time, CHD can weaken the heart muscle and lead to heart failure and arrhythmias (ah-RITH-me-ahs). Heart failure is a condition in which your heart can't pump enough blood to meet your body's needs. Arrhythmias are problems with the rate or rhythm of the heartbeat.

Carotid Artery Disease (CAD)

Carotid (ka-ROT-id) artery disease occurs if plaque builds up in the arteries on each side of your neck (the carotid arteries). These arteries supply oxygen-rich blood to your brain. If blood flow to your brain is reduced or blocked, you may have a stroke.

An ischemic stroke occurs if an artery that supplies oxygen-rich blood to the brain becomes blocked. Without oxygen, brain cells start to die after a few minutes. If brain cells die or are damaged because of a stroke, symptoms occur in the parts of the body that these brain cells control. Examples of stroke symptoms include sudden weakness; paralysis or numbness of the face, arms, or legs (paralysis is an inability to move); trouble speaking or understanding speech; and trouble seeing.

Another condition that's similar to a stroke is a transient ischemic attack, also called a TIA or "mini-stroke." A TIA occurs if blood flow to a portion of the brain is blocked only for a short time. Thus, damage to the brain cells isn't permanent (lasting).

Like ischemic strokes, TIAs often are caused by blood clots. Although TIAs are not full-blown strokes, they greatly increase the risk of having a stroke. If you have a TIA, it's important for your doctor to find the cause so you can take steps to prevent a stroke

Both strokes and TIA's are serious medical conditions that require emergency care. A stroke can cause lasting brain damage, long-term disability, or even death.

Peripheral Arterial Disease (PAD)

Peripheral arterial disease (PAD) is a disease in which plaque builds up in the arteries that carry blood to your limbs. PAD usually affects the arteries in the legs, but it also can affect the arteries that carry blood from your heart to your arms, kidneys, and stomach. Blocked blood flow to your legs can cause pain and numbness. It also can raise your risk of getting an infection in the affected limbs. If severe enough, blocked blood flow can cause gangrene (tissue death). If the plaque builds up around the arteries that carry blood to the kidneys, it can impair kidney function.

What Causes Ischemic Vascular Disease?

Most types of ischemic vascular disease are caused atherosclerosis. The exact cause of atherosclerosis isn't known. However, studies show that atherosclerosis is a slow, complex disease that may start in childhood. It develops faster as you age.

Atherosclerosis may start when certain factors damage the inner layers of the arteries. These factors include:

- Smoking
- High amounts of certain fats and cholesterol in the blood
- High blood pressure
- High amounts of sugar in the blood due to insulin resistance or diabetes

Plaque may begin to build up where the arteries are damaged. Over time, plaque hardens and narrows the arteries. Eventually, an area of plaque can rupture (break open).

When this happens, blood cell fragments called platelets (PLATE-lets) stick to the site of the injury. They may clump together to form blood clots. Clots narrow the arteries even more, limiting the flow of oxygen-rich blood to your body.

Depending on which arteries are affected, blood clots can worsen angina (chest pain) or cause a heart attack or stroke.

Who Is at Risk for Ischemic Vascular Disease?

The exact cause of atherosclerosis isn't known. However, certain traits, conditions, or habits may raise your risk for the disease. These conditions are known as risk factors. The more risk factors you have, the more likely it is that you'll develop atherosclerosis.

You can control most risk factors and help prevent or delay atherosclerosis. Other risk factors can't be controlled.

Major Risk Factors

- Unhealthy blood cholesterol levels. This includes high LDL cholesterol (sometimes called "bad" cholesterol) and low HDL cholesterol (sometimes called "good" cholesterol).
- High blood pressure. Blood pressure is considered high if it stays at or above 140/90 mmHg over time.
- Smoking. Smoking can damage and tighten blood vessels, raise cholesterol levels, and raise blood pressure. Smoking also doesn't allow enough oxygen to reach the body's tissues.
- Insulin resistance. This condition occurs if the body can't use its insulin properly. Insulin is a hormone that helps move blood sugar into cells

where it's used as an energy source. Insulin resistance may lead to diabetes. The leading cause for insulin resistance is obesity.

- Diabetes. With this disease, the body's blood sugar level is too high because the body doesn't make enough insulin or doesn't use its insulin properly.
- Overweight or obesity. The terms "overweight" and "obesity" refer to body weight that's greater than what is considered healthy for a certain height.
- Lack of physical activity. A lack of physical activity can worsen other risk factors for atherosclerosis, such as unhealthy blood cholesterol levels, high blood pressure, diabetes, and overweight and obesity.
- Unhealthy diet. An unhealthy diet can raise your risk for atherosclerosis. Foods that are high in saturated and trans fats, cholesterol, sodium (salt), and sugar can worsen other atherosclerosis risk factors.
- Older age. As you get older, your risk for atherosclerosis increases. Genetic or lifestyle factors cause plaque to build up in your arteries as you age. By the time you're middle-aged or older, enough plaque has built up to cause signs or symptoms. In men, the risk increases after age 45. In women, the risk increases after age 55.
- Family history of early heart disease. Your risk for atherosclerosis increases if your father or a brother was diagnosed with heart disease before 55 years of age, or if your mother or a sister was diagnosed with heart disease before 65 years of age.

Although age and a family history of early heart disease are risk factors, it doesn't mean that you'll develop atherosclerosis if you have one or both. Controlling other risk factors often can lessen genetic influences and prevent atherosclerosis, even in older adults.

Studies show that an increasing number of children and youth are at risk for atherosclerosis. This is due to a number of causes, including rising childhood obesity rates.

Emerging Risk Factors

Researchers continue to study other possible risk factors for atherosclerosis. High levels of a protein called C-reactive protein (CRP) in the blood may raise the risk for atherosclerosis and heart attack. High levels of CRP are a sign of inflammation in the body.

Inflammation is the body's response to injury or infection. Damage to the arteries' inner walls may trigger inflammation and help plaque grow.

Research is under way to find out whether reducing inflammation and lowering CRP levels also can reduce the risk for atherosclerosis and heart attack.

High levels of triglycerides (tri-GLIH-seh-rides) in the blood also may raise the risk for atherosclerosis, especially in women. Triglycerides are a type of fat.

Other Factors That Affect Atherosclerosis

Other conditions and factors also may contribute to atherosclerosis including:

- **Sleep apnea.** Sleep apnea is a common disorder in which you have one or more pauses in breathing or shallow breaths while you sleep. Untreated sleep apnea can increase your risk for high blood pressure, diabetes, and even a heart attack or stroke.
- **Stress.** Research shows that the most commonly reported "trigger" for a heart attack is an emotionally upsetting event, especially one involving anger.
- **Alcohol.** Heavy drinking can damage the heart muscle and worsen other risk factors for CHD. Men should have no more than two drinks containing alcohol a day. Women should have no more than one drink containing alcohol a day.

What Are the Signs and Symptoms of Ischemic Vascular Disease?

Ischemic vascular disease usually doesn't cause signs and symptoms until it severely narrows or totally blocks an artery. Many people don't know they have the disease until they have a medical emergency, such as a heart attack or stroke.

Some people may have signs and symptoms of the disease. Signs and symptoms will depend on which arteries are affected.

Coronary Arteries

The coronary arteries supply oxygen-rich blood to your heart. If plaque narrows or blocks these arteries (a disease called coronary heart disease, or CHD), a common symptom is angina. Angina is chest pain or discomfort that occurs when your heart muscle doesn't get enough oxygen-rich blood.

Angina may feel like pressure or squeezing in your chest. You also may feel it in your shoulders, arms, neck, jaw, or back. Angina pain may even feel like indigestion. The pain tends to get worse with activity and go away with rest. Emotional stress also can trigger the pain.

Other symptoms of CHD are shortness of breath and heart rhythm disorders (also called heart palpitations or arrhythmias).

Plaque also can form in the heart's smallest arteries. This disease is called coronary microvascular disease (MVD). Symptoms of coronary MVD include angina, shortness of breath, sleep problems, fatigue (tiredness), and lack of energy.

Carotid Arteries

The carotid arteries supply oxygen-rich blood to your brain. If plaque narrows or blocks these arteries (a disease called carotid artery disease), you may have symptoms of a stroke. These symptoms may include:

- Sudden weakness
- Paralysis (an inability to move) or numbness of the face, arms, or legs, especially on one side of the body
- Confusion
- Trouble speaking or understanding speech
- Trouble seeing in one or both eyes
- Problems breathing

- Dizziness, trouble walking, loss of balance or coordination, and unexplained falls
- Loss of consciousness
- Sudden and severe headache

Peripheral Arteries

Peripheral arteries deliver blood to the limbs: legs, arms and hands. If plaque narrows or blocks these arteries (a disease called Peripheral Arterial Disease (PAD) you might have signs and symptoms such as:

- Pain, numbness, aching, or heaviness in the leg muscles
- cramping in the affected leg(s) and in the buttocks, thighs, calves, and feet

Symptoms of PAD are called **intermittent claudication**. They typically show during walking or climbing stairs and may ease after resting. This is because during physical activity, your muscles need increased blood flow. If your blood vessels are narrowed or blocked, your muscles won't get enough blood, which will lead to symptoms. When resting, the muscles need less blood flow, so the symptoms will go away.

About 10 percent of people who have PAD have claudication. This symptom is more likely in people who also have atherosclerosis in other arteries.

Other signs and symptoms of PAD include:

- Weak or absent pulses in the legs or feet
- Sores or wounds on the toes, feet, or legs that heal slowly, poorly, or not at all
- A pale or bluish color to the skin
- A lower temperature in one leg compared to the other leg
- Poor nail growth on the toes and decreased hair growth on the legs
- Erectile dysfunction, especially among men who have diabetes

Other symptoms may occur if the disease affects peripheral arteries that carry blood to other organs in the body. Many people with PAD do not have any signs and symptoms.

How Is Ischemic Vascular Disease Diagnosed?

Your doctor will diagnose Ischemic Vascular Disease based on your medical and family histories, a physical exam, and test results. Depending on your symptoms your doctor may choose any of the following:

Physical Exam

During the physical exam, your doctor your doctor will check your blood pressure, heart rhythm and may listen to your arteries for an abnormal whooshing sound called a bruit (broo-E). Your doctor can hear a bruit when placing a stethoscope over an affected artery. A bruit may indicate poor blood flow due to plaque buildup.

Your doctor also may check to see whether any of your pulses (for example, in the leg or foot) are weak or absent. A weak or absent pulse can be a sign of a blocked artery.

Diagnostic Tests

Your doctor may recommend one or more tests to diagnose atherosclerosis. These tests also can help your doctor learn the extent of your disease and plan the best treatment.

Blood Tests

Blood tests check the levels of certain fats, cholesterol, sugar, and proteins in your blood. Abnormal levels may be a sign that you're at risk for atherosclerosis.

EKG (Electrocardiogram)

An EKG is a simple, painless test that detects and records the heart's electrical activity. The test shows how fast the heart is beating and its rhythm (steady or irregular). An EKG also records the strength and timing of electrical signals as they pass through the heart.

An EKG can show signs of heart damage caused by CHD. The test also can show signs of a previous or current heart attack.

Chest X Ray

A chest x ray takes pictures of the organs and structures inside your chest, such as your heart, lungs, and blood vessels. A chest x ray can reveal signs of heart failure.

Ankle/Brachial Index

This test compares the blood pressure in your ankle with the blood pressure in your arm to see how well your blood is flowing. This test can help diagnose PAD

Echocardiography

Echocardiography (echo) uses sound waves to create a moving picture of your heart. The test provides information about the size and shape of your heart and how well your heart chambers and valves are working.

Echo also can identify areas of poor blood flow to the heart, areas of heart muscle that aren't contracting normally, and previous injury to the heart muscle caused by poor blood flow.

Computed Tomography Scan

A computed tomography (CT) scan creates computer-generated pictures of the heart, brain, or other areas of the body. The test can show hardening and narrowing of large arteries.

A cardiac CT scan also can show whether calcium has built up in the walls of the coronary (heart) arteries. This may be an early sign of CHD.

Stress Testing

During stress testing, you exercise to make your heart work hard and beat fast while heart tests are done. If you can't exercise, you may be given medicine to make your heart work hard and beat fast.

When your heart is working hard, it needs more blood and oxygen. Plaque-narrowed arteries can't supply enough oxygen-rich blood to meet your heart's needs.

A stress test can show possible signs and symptoms of CHD, such as:

- Abnormal changes in your heart rate or blood pressure
- Shortness of breath or chest pain
- Abnormal changes in your heart rhythm or your heart's electrical activity

As part of some stress tests, pictures are taken of your heart while you exercise and while you rest. These imaging stress tests can show how well blood is flowing in various parts of your heart. They also can show how well your heart pumps blood when it beats.

Angiography

Angiography (an-jee-OG-ra-fee) is a test that uses dye and special x rays to show the inside of your arteries. This test can show whether plaque is blocking your arteries and how severe the blockage is.

A thin, flexible tube called a catheter is put into a blood vessel in your arm, groin (upper thigh), or neck. Dye that can be seen on an x-ray picture is injected through the catheter into the arteries. By looking at the x-ray picture, your doctor can see the flow of blood through your arteries.

Other Tests

Other tests are being studied to see whether they can give a better view of plaque buildup in the arteries. Examples of these tests include magnetic resonance imaging (MRI) and positron emission tomography (PET).

Who will take care of my Vascular Ischemic Disease?

If you have Vascular Ischemic Disease, a primary care doctor, such as an internist or family practitioner, may handle your care. Your doctor may recommend other health care specialists if you need expert care, such as:

- A cardiologist. This is a doctor who specializes in diagnosing and treating heart diseases and conditions. You may go to a cardiologist if you have coronary heart disease (CHD) or coronary microvascular disease (MVD).
- A vascular specialist. This is a doctor who specializes in diagnosing and treating blood vessel problems. You may go to a vascular specialist if you have peripheral arterial disease (PAD).

- A neurologist. This is a doctor who specializes in diagnosing and treating nervous system disorders. You may see a neurologist if you've had a stroke due to carotid artery disease.

How Is Vascular Ischemic Disease Treated?

The most effective treatments for all vascular ischemic diseases are quitting smoking, and medications to control high blood pressure and high cholesterol. Some patients also need medications to prevent blood clots. The goals of treatment include:

- Relieving symptoms
- Reducing risk factors in an effort to slow or stop the buildup of plaque
- Lowering the risk of blood clots forming
- Widening or bypassing plaque-clogged arteries
- Preventing atherosclerosis-related diseases

Quitting Smoking

- If you smoke or use tobacco, quit. Smoking can damage and tighten blood vessels and raise your risk for atherosclerosis. Talk with your doctor about programs and products that can help you quit. Also, try to avoid secondhand smoke.
- The University of Michigan MHealthy Tobacco Consultation Service (TCS) offers a variety of tobacco treatment options in a non-judgmental, supportive environment. To find out more visit <http://hr.umich.edu/mhealthy/programs/tobacco/programs.html> or call (734) 998-6222

Medicines

To slow the progress of plaque buildup, your doctor may prescribe medicines to help lower your cholesterol, blood pressure and prevent blood clots.

- **Blood pressure** is the force of blood pushing against the walls of the arteries as the heart pumps blood. If this pressure rises and stays high over time, it can damage your heart, blood vessels, kidneys, and other

parts of your body. To learn more about high blood pressure monitoring and treatments visit www.med.umich.edu/careguides, type “high blood pressure” in the search box and hit the Search button.

- **Cholesterol** is a waxy, fat-like substance that’s found in all cells of the body. High blood cholesterol is a condition in which you have too much cholesterol in your blood. If cholesterol builds up in the walls of the arteries it can restrict the flow of blood and increase the chance for having a heart attack, stroke, angina or PAD. To learn more about high blood cholesterol visit www.med.umich.edu/careguides, type “cholesterol” in the search box and hit the Search button.
- **Blood clots** occur when blood thickens and clumps together. Blood vessels affected by atherosclerosis have a high risk to form blood clots. The clots restrict normal blood flow to the heart, brain or legs and cause serious, life-threatening events such as heart attacks, strokes and lack of circulation in the legs. Your doctor may prescribe aspirin or other medications such as Coumadin® or Plavix® to prevent blood clots from developing and reduce your risk for having these serious events. Medications to prevent blood clots are sometimes called “blood thinners” and they are especially important in people who have a condition called atrial fibrillation. Atrial fibrillation is a problem with the rate or rhythm of the heartbeat and increases the risk for blood clots that cause stroke. Most people who are diagnosed with atrial fibrillation take blood thinning medications.

All University of Michigan Health System Primary Care Centers have pharmacists on staff. The pharmacist can help you learn how to use your prescription and nonprescription (over-the-counter) medicines safely.

Other treatments for vascular ischemic disease include

- **Following a Healthy Diet.**

A healthy diet includes a variety of fruits and vegetables (including beans and peas). It also includes whole grains, lean meats, poultry without skin,

seafood, and fat-free or low-fat milk and dairy products. A healthy diet is low in sodium (salt), added sugar, solid fats, and refined grains.

- **Being Physically Active.**

Regular physical activity can lower many atherosclerosis risk factors, including cholesterol, high blood pressure, and excess weight. Ask your doctor what types and amounts of activity are safe for you.

- **Maintaining a Healthy Weight.**

Maintaining a healthy weight can lower your risk for atherosclerosis. The key elements to losing weight are diet and exercise. A general goal to aim for is a body mass index (BMI) of less than 25.

- Your primary health care provider can help you choose a healthy weight loss program that fits your personal needs and preferences.
- Registered dietitians are food and nutrition experts who develop personalized nutrition plans for weight-loss. The University of Michigan Health System has registered dietitians in all of our Primary Care Centers. To schedule an appointment call 1-800-211-8181.

- **Managing Stress.**

Research shows that the most commonly reported "trigger" for a heart attack is an emotionally upsetting event—particularly one involving anger. Also, some of the ways people cope with stress—such as drinking, smoking, or overeating—aren't healthy. Physical activity, medicine, and relaxation therapy also can help relieve stress. You may want to consider taking part in a stress management program.

To learn more about heart healthy diet, low sodium diet and weight control visit www.med.umich.edu/careguides, type a keyword in the search box and hit the Search button.

Medical Procedures and Surgery

If you have severe atherosclerosis, your doctor may recommend a medical procedure or surgery.

- **Angioplasty** (AN-jee-oh-plas-tee) is a procedure that's used to open blocked or narrowed arteries in the heart. (coronary arteries) Angioplasty can improve blood flow to the heart and relieve chest pain. Sometimes a small mesh tube called a **stent** is placed in the artery to keep it open after the procedure. Angioplasty is also used to open blocked or narrow arteries in the neck and legs.
- **Coronary artery bypass grafting** (CABG) is a type of surgery. In CABG, arteries or veins from other areas in your body are used to bypass (that is, go around) your narrowed coronary arteries. CABG can improve blood flow to your heart, relieve chest pain, and possibly prevent a heart attack.
- **Bypass grafting** also can be used for leg arteries. For this surgery, surgeons typically use a man-made (also call “artificial” or “synthetic”) device that mimics a blood vessel to bypass a narrowed or blocked artery in one of the legs. The artificial blood vessel redirects blood around the blocked artery, improving blood flow to the leg.
- **Carotid endarterectomy** (END-ar-ter-EK-to-me) is surgery to remove plaque buildup from the carotid arteries in the neck. This procedure restores blood flow to the brain, which can help prevent a stroke.

Living with Vascular Ischemic Disease

Improved treatments have reduced the number of deaths from atherosclerosis-related diseases. These treatments also have improved the quality of life for people who have these diseases.

If you have vascular ischemic disease, work closely with your doctor and other health care providers to avoid serious problems, such as heart attack and stroke. Follow your treatment plan and take all of your medicines as your doctor prescribes. Your doctor will let you know how often you should schedule office visits or blood tests. Be sure to let your doctor know if you have new or worsening symptoms.

Emotional issues and support

Having an atherosclerosis-related disease may cause fear, anxiety, depression, and stress. Talk about how you feel with your doctor. Talking to a professional counselor or a social worker also can help. If you're very depressed, your doctor may recommend medicines or other treatments that can improve your quality of life.

Talk about your lifestyle changes with your family and friends—whoever can provide support or needs to understand why you're changing your habits. Family and friends may be able to help you make lifestyle changes. For example, they can help you plan healthier meals. Because atherosclerosis tends to run in families, your lifestyle changes may help many of your family members too.

The University of Michigan Health System has licensed social workers in all of our Primary Care Centers. To schedule an appointment call 1-800-888-9825.

Advance Directives

A medical crisis could leave someone too ill to make his or her own healthcare decisions. Making healthcare plans for the future is an important step toward making sure you get the medical care you would want, even when doctors and family members are making the decisions for you. To learn more about Advance Directives and to print the necessary forms visit:

www.med.umich.edu/careguides type “Advance Directives” in the search box and hit the Search button.

Pay attention to warning signs

Ischemic Vascular Disease raises your risk for a heart attack, stroke or TIA. Learn the signs and symptoms and call 9-1-1 if you have any of these symptoms. This can make the difference between life and death.

Heart-attack warning signs

- Chest pain or discomfort. This involves uncomfortable pressure, squeezing, fullness, or pain in the center of left side of the chest that can be mild or strong. This pain or discomfort often lasts more than a few minutes or goes away and comes back.
- Upper body discomfort in one or both arms, the back, neck, jaw, or upper part of the stomach.
- Shortness of breath, which may occur with or before chest discomfort.
- Nausea (feeling sick to your stomach), vomiting, light-headedness or fainting, or breaking out in a cold sweat.
- Symptoms also may include sleep problems, fatigue (tiredness), and lack of energy.

The symptoms of angina can be similar to the symptoms of a heart attack. Angina pain usually lasts for only a few minutes and goes away with rest. Chest pain or discomfort that doesn't go away or changes from its usual pattern (for example, occurs more often or while you're resting) can be a sign of a heart attack. If you don't know whether your chest pain is angina or a heart attack, call 9-1-1.

Let the people you see regularly know you're at risk for a heart attack. Ask them to learn **Hands-Only CPR** so they can act quickly in case of an emergency if you suddenly faint, collapse, or have other severe symptoms. To learn Hands-only CPR visit www.med.umich.edu/careguides, type "hands-only cpr" in the search box and hit the Search button. The results list includes a one minute video and a one page handout on hands-only CPR.

Transient Ischemic Attack (Mini-Stroke) warning signs

For some people, having a TIA, or "mini-stroke," is the first sign of carotid artery disease. During a mini-stroke, you may have some or all of the symptoms of a stroke. However, the symptoms usually go away on their own within 24 hours.

The symptoms may include:

- Sudden weakness or numbness in the face or limbs, often on just one side of the body
- The inability to move one or more of your limbs
- Trouble speaking or understanding speech
- Sudden trouble seeing in one or both eyes
- Dizziness or loss of balance
- A sudden, severe headache with no known cause

Even if the symptoms stop quickly, you should see a doctor right away. Call 9-1-1 for help. Do not drive yourself to the hospital. It's important to get checked and to get treatment started as soon as possible.

A mini-stroke is a warning sign that you're at high risk of having a stroke. You shouldn't ignore these symptoms. About one-third of people who have mini-strokes will later have strokes. Getting medical care can help find possible causes of a mini-stroke and help you manage risk factors. These actions might prevent a future stroke.

Although a mini-stroke may warn of a stroke, it doesn't predict when a stroke will happen. A stroke may occur days, weeks, or even months after a mini-stroke. In about half of the cases of strokes that follow TIAs, the strokes occur within 1 year.

Stroke warning signs

The symptoms of a stroke are the same as those of a mini-stroke, but the results are not. A stroke can cause lasting brain damage; long-term disability, such as vision or speech problems or paralysis (an inability to move); or death. Most people who have strokes have not previously had warning mini-strokes. Getting treatment for a stroke right away is very important. You have the best chance for full recovery if treatment to open a blocked artery is given within 4 hours of symptom onset. The sooner treatment occurs, the better your chances of recovery.

Call 9-1-1 for help as soon as symptoms occur. Do not drive yourself to the hospital. It's very important to get checked and to get treatment started as soon as possible.

Make those close to you aware of stroke symptoms and the need for urgent action. Learning the signs and symptoms of a stroke will allow you to help yourself or someone close to you lower the risk of brain damage or death due to a stroke.

In summary: follow these Smart Steps:

- ➔ Follow your treatment plan and take all of your medicines as your doctor orders
- ➔ Show up for your office visits or blood tests
- ➔ Let your doctor know if you have new or worsening symptoms
- ➔ Eat a heart healthy diet and keep your weight under control
- ➔ Keep a record of your blood pressure and cholesterol numbers
- ➔ Know the warning signs of a heart attack and stroke and call 911 in case of an emergency.

This booklet was adapted from National Heart Lung and Blood Institute, National Institute of Health

<https://www.nhlbi.nih.gov/health/health-topics/by-alpha/>

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Booklet associated with a UMHS Clinical Care Guideline
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Last Revised 5/5/2014

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