



Diseases and Conditions

Cardiomyopathy

By Mayo Clinic Staff

Cardiomyopathy (kahr-dee-o-my-OP-uh-thee) is a condition where the heart muscle is abnormal. The main types of cardiomyopathy include dilated, hypertrophic and restrictive cardiomyopathy. Cardiomyopathy makes it harder for your heart to pump and deliver blood to the rest of your body. Cardiomyopathy can lead to heart failure.

Cardiomyopathy can be treated. The type of treatment you'll receive depends on which type of cardiomyopathy you have and how serious it is. Your treatment may include medications, surgically implanted devices or, in severe cases, a heart transplant.

In the early stages, people with cardiomyopathy may not have any signs and symptoms. But as the condition advances, signs and symptoms usually appear. Cardiomyopathy signs and symptoms may include:

- Breathlessness with exertion or even at rest
- Swelling of the legs, ankles and feet
- Bloating of the abdomen due to fluid buildup
- Cough while lying down
- Fatigue
- Irregular heartbeats that feel rapid, pounding or fluttering
- Chest pain
- Dizziness, lightheadedness and fainting

No matter what type of cardiomyopathy you have, signs and symptoms tend to get worse unless treated. In certain people, this worsening happens quickly, while in others, cardiomyopathy may not worsen for a long time.

When to see a doctor

See your doctor if you have one or more of the signs and symptoms associated with cardiomyopathy. Call 911 or your local emergency number if you experience severe difficulty breathing, fainting or chest pain that lasts for more than a few minutes. Because the condition is

sometimes hereditary, your doctor may advise that your family members be examined for cardiomyopathy.

Often, the cause of the cardiomyopathy is unknown. In some people, however, doctors are able to identify some contributing factors. Possible causes of cardiomyopathy include:

- Genetic conditions
- Long-term high blood pressure
- Heart tissue damage from a previous heart attack
- Chronic rapid heart rate
- Heart valve problems
- Metabolic disorders, such as obesity, thyroid disease or diabetes
- Nutritional deficiencies of essential vitamins or minerals, such as thiamin (vitamin B-1)
- Pregnancy complications
- Drinking too much alcohol over many years
- Use of cocaine, amphetamines or anabolic steroids
- Use of some chemotherapy drugs and radiation to treat cancer
- Certain infections, which may injure the heart and trigger cardiomyopathy
- Iron buildup in your heart muscle (hemochromatosis)
- A condition that causes inflammation and can cause lumps of cells to grow in the heart and other organs (sarcoidosis)
- A disorder that causes the buildup of abnormal proteins (amyloidosis)
- Connective tissue disorders

Types of cardiomyopathy include:

- **Dilated cardiomyopathy.** This is the most common type of cardiomyopathy. In this disorder, the pumping ability of your heart's main pumping chamber — the left ventricle — becomes less forceful. The left ventricle becomes enlarged (dilated) and can't effectively pump blood out of the heart.

Although this type can affect people of all ages, it occurs most often in middle-aged people and is more likely to affect men. Some people with dilated cardiomyopathy have a family history of the condition. In others, dilated cardiomyopathy may occur as a result of certain conditions such as coronary heart disease, infection, chemotherapy, or drug or alcohol use. The cause may also be unknown (idiopathic).

- **Hypertrophic cardiomyopathy.** This type involves abnormal thickening of your heart muscle, particularly affecting the muscle of your heart's main pumping chamber (left ventricle). The thickened heart muscle can make it harder for the heart to pump blood.

Hypertrophic cardiomyopathy can develop at any age, but the condition tends to be more severe if it becomes apparent during childhood. Most affected people have a family history of

the disease, and some genetic mutations have been linked to hypertrophic cardiomyopathy.

- **Restrictive cardiomyopathy.** The heart muscle in people with restrictive cardiomyopathy becomes rigid and less elastic, meaning the heart can't properly expand and fill with blood between heartbeats. While restrictive cardiomyopathy can occur at any age, it most often tends to affect older people. It's the least common type of cardiomyopathy and can occur for no known reason (idiopathic).

The condition may also be caused by diseases elsewhere in the body that affect the heart, such as a disease in which iron builds up in the heart muscle (hemochromatosis), a disorder that causes the buildup of abnormal proteins (amyloidosis), a disease that causes inflammation and can cause lumps of cells to grow in the heart and other organs (sarcoidosis), connective tissue disorders, or a disorder that causes abnormal blood cells to damage the heart (eosinophilic heart disease).

- **Arrhythmogenic right ventricular dysplasia.** In this rare type of cardiomyopathy, the muscle in the lower right heart chamber (right ventricle) is replaced by scar tissue. This can lead to heart rhythm problems. This condition is often caused by genetic mutations.
- **Other types of cardiomyopathy.** Other types of cardiomyopathy (unclassified cardiomyopathies) exist, but they don't fit within the other types of cardiomyopathy.

There are a number of risk factors that can increase your risk of cardiomyopathy, including:

- **Family history.** People with a family history of cardiomyopathy, heart failure and sudden cardiac arrest are more likely to develop cardiomyopathy than are those without a family history of heart problems.
- **High blood pressure.** People who have high blood pressure over a long period of time are at higher risk of cardiomyopathy.
- **Conditions that affect the heart.** People who have had a heart attack, coronary artery disease or viral infections that affected the heart are at higher risk of cardiomyopathy.
- **Obesity.** Excess weight makes the heart work harder, which may increase the risk of cardiomyopathy and heart failure.
- **Alcoholism.** People who abuse alcohol can damage their hearts, and cardiomyopathy can be a consequence. The risk increases significantly after more than five years of drinking seven to eight drinks daily.
- **Illicit drug use.** Drugs, such as cocaine, amphetamines and anabolic steroids, may increase the risk of cardiomyopathy.
- **Cancer treatments.** While necessary to treat cancer, many cancer treatments can damage some healthy cells too. Certain chemotherapy drugs and radiation therapy can increase the risk of cardiomyopathy.
- **Diabetes.** Having diabetes ups the risk of cardiomyopathy, heart failure and other heart problems.
- **Thyroid disorders.** Having an under- or overactive thyroid gland can increase your risk of cardiomyopathy.

- **Hemochromatosis.** This disorder causes the body to store excess iron, and it has been linked to an increased risk of dilated cardiomyopathy.
- **Diseases that affect the heart.** Other diseases, such as a disorder that causes the buildup of abnormal proteins (amyloidosis), a disease that causes inflammation and can cause lumps of cells to grow in the heart and other organs (sarcoidosis), or connective tissue disorders can increase your risk of cardiomyopathy.

Having cardiomyopathy may lead to other heart conditions, including:

- **Heart failure.** Heart failure means your heart can't pump enough blood to meet your body's needs. The thickened, stiffened or weakened heart muscle due to cardiomyopathy can become unable to pump or can stop blood from flowing out of the heart. Left untreated, heart failure can be life-threatening.
- **Blood clots.** Because your heart can't pump effectively, you're more likely to have blood clots form in your heart if you have cardiomyopathy. If clots are pumped out of the heart and enter your bloodstream, they can block the blood flow to other organs, including your heart and brain.

To reduce your risk, your doctor may prescribe a blood thinner (anticoagulant medication), such as aspirin, clopidogrel (Plavix), apixaban (Eliquis), dabigatran (Pradaxa), rivaroxaban (Xarelto) or warfarin (Coumadin, Jantoven).

- **Valve problems.** Because people with cardiomyopathy have an enlarged heart, the heart valves may not close properly, leading to a backward flow of blood.
- **Cardiac arrest and sudden death.** Cardiomyopathy can lead to abnormal heart rhythms. Some of these heart rhythms are too slow to keep blood flowing through your heart effectively, and some are too fast to allow the heart to beat properly. In either case, these abnormal heart rhythms can result in fainting or, in some cases, sudden death if your heart stops beating effectively.

If you think you may have cardiomyopathy or are worried about your risk because of a family history, make an appointment with your primary care doctor. He or she may refer you to a heart specialist (cardiologist).

Because appointments can be brief, and because there's often a lot to discuss, it's a good idea to be prepared for your appointment. Here's some information to help you get ready for your appointment and what to expect from your doctor.

What you can do

- **Be aware of any pre-appointment restrictions.** At the time you make the appointment, be sure to ask if there's anything you need to do in advance, such as restrict your diet.
- **Write down any symptoms you're experiencing,** including any that may seem unrelated to cardiomyopathy.
- **Write down key personal information,** including a family history of cardiomyopathy, heart disease, stroke, high blood pressure or diabetes and any major stresses or recent life changes.
- **Make a list of all medications,** as well as any vitamins or supplements, that you're taking.

- **Take a family member or friend along**, if possible. Sometimes it can be difficult to remember all of the information provided to you during an appointment. Someone who accompanies you may remember something that you missed or forgot.
- **Be prepared to discuss** your diet and exercise habits. If you don't already follow a diet or exercise routine, be ready to talk to your doctor about any challenges you might face in getting started.
- **Write down questions to ask** your doctor.

Your time with your doctor is limited, so preparing a list of questions will help you make the most of your time together. List your questions from most important to least important in case time runs out. For cardiomyopathy, some basic questions to ask your doctor include:

- What's the most likely cause of my symptoms?
- What are other possible causes?
- What kinds of tests do I need? Do these tests require any special preparation?
- What treatment options are available, and which do you recommend for me?
- What foods should I eat or avoid?
- Is it OK for me to exercise? What level of activity is OK?
- How often should I be screened?
- Should I tell my family members to be screened for cardiomyopathy?
- I have other health conditions. How can I best manage these conditions together?
- Is there a generic alternative to the medicine you're prescribing me?
- Are there any brochures or other printed material that I can take home with me? What websites do you recommend viewing?

In addition to the questions that you've prepared to ask your doctor, don't hesitate to ask additional questions.

What to expect from your doctor

Your doctor is likely to ask you a number of questions. Being ready to answer them may reserve time to go over any points you want to spend more time on. Your doctor may ask:

- When did you first begin experiencing symptoms?
- Do you have symptoms all the time, or do they come and go?
- How severe are your symptoms?
- What, if anything, seems to improve your symptoms?
- What, if anything, appears to worsen your symptoms?
- Do any of your blood relatives have cardiomyopathy or other types of heart disease?

Your doctor will conduct a physical examination, take a personal and family medical history, and ask when your symptoms occur — for example, whether exercise brings on your symptoms. If your

doctor thinks you have cardiomyopathy, you may need to undergo several tests to confirm the diagnosis. These tests may include:

- **Chest X-ray.** An image of your heart will show whether it's enlarged.
- **Echocardiogram.** An echocardiogram uses sound waves to produce images of the heart. Your doctor can use these images to examine the size and function of your heart and its motions as it beats. This test checks your heart valves and helps your doctor determine the cause of your symptoms.
- **Electrocardiogram (ECG).** In this noninvasive test, electrode patches are attached to your skin to measure electrical impulses from your heart. An ECG can show disturbances in the electrical activity of your heart, which can detect abnormal heart rhythms and areas of injury.
- **Treadmill stress test.** Your heart rhythm, blood pressure and breathing are monitored while you walk on a treadmill. Your doctor may recommend a treadmill stress test to evaluate symptoms, determine your exercise capacity and determine if exercise provokes abnormal heart rhythms.
- **Cardiac catheterization.** In this procedure, a thin tube (catheter) is inserted in your groin and threaded through your blood vessels to your heart. Doctors may extract a small sample (biopsy) of your heart for analysis in the laboratory. Pressure within the chambers of your heart can be measured to see how forcefully blood pumps through your heart.

Doctors may inject a dye into your blood vessels to help your blood vessels show up on X-rays (coronary angiogram). This test may be used to ensure that you do not have any blockages in your blood vessels.

- **Cardiac magnetic resonance imaging (MRI).** Cardiac MRI is an imaging technique that uses magnetic fields and radio waves to create images of your heart. Cardiac MRI may be used in addition to echocardiography, particularly if the images from your echocardiogram aren't helpful in making a diagnosis.
- **Cardiac computerized tomography (CT) scan.** In a cardiac CT scan, you lie on a table inside a doughnut-shaped machine. An X-ray tube inside the machine rotates around your body and collects images of your heart and chest. This test may occasionally be conducted to assess the heart size and function and assess heart valves.
- **Blood tests.** Several blood tests may be done, including those to check your kidney, thyroid and liver function, and to measure your iron levels.

One blood test can measure B-type natriuretic peptide (BNP), a protein produced in your heart. Your blood level of BNP rises when your heart is subjected to the stress of heart failure, a common complication of cardiomyopathy.

- **Genetic testing or screening.** Cardiomyopathy can be hereditary. Discuss with your doctor whether genetic testing may be appropriate for you and your family. Your doctor may recommend family screening or genetic testing for your first-degree relatives (parents, siblings and children).

The overall goals of treatment for cardiomyopathy are to manage your signs and symptoms, prevent your condition from worsening, and reduce your risk of complications. Treatment varies by which major type of cardiomyopathy you have.

Dilated cardiomyopathy

If you're diagnosed with dilated cardiomyopathy, your doctor may recommend treatment including:

- **Medications.** Your doctor may prescribe medications to improve your heart's pumping ability and function, improve blood flow, lower blood pressure, slow your heart rate, remove excess fluid from your body or keep blood clots from forming.
- **Surgically implanted devices.** If you're at risk of serious heart rhythm problems, your doctor may recommend an implantable cardioverter-defibrillator (ICD) — a device that monitors your heart rhythm and delivers electric shocks when needed to control abnormal heart rhythms.

In some cases, your doctor may recommend a pacemaker that coordinates the contractions between the right and left ventricles (biventricular pacemaker).

Hypertrophic cardiomyopathy

If you're diagnosed with hypertrophic cardiomyopathy, your doctor may recommend several treatments, including:

- **Medications.** Your doctor may prescribe medications to relax your heart, slow its pumping action and stabilize its rhythm.
- **Implantable cardioverter-defibrillator (ICD).** If you're at risk of serious heart rhythm problems, your doctor may recommend an ICD to monitor your heart rhythm and deliver electric shocks when needed to control abnormal heart rhythms.
- **Septal myectomy.** In a septal myectomy, your surgeon removes part of the thickened heart muscle wall (septum) that separates the two bottom heart chambers (ventricles). Removing part of the heart muscle improves blood flow through the heart and reduces mitral valve regurgitation.
- **Septal ablation.** In septal ablation, a small portion of the thickened heart muscle is destroyed by injecting alcohol through a long, thin tube (catheter) into the artery supplying blood to that area.

Restrictive cardiomyopathy

Treatment for restrictive cardiomyopathy focuses on improving symptoms. Your doctor will recommend you pay careful attention to your salt and water intake and monitor your weight daily. Your doctor may also recommend you take diuretics if sodium and water retention becomes a problem. You may be prescribed medications to lower your blood pressure or control abnormal heart rhythms.

If the cause of your restrictive cardiomyopathy is found, treatment will also be directed at the underlying disease, such as amyloidosis.

Many of the medications that doctors prescribe for cardiomyopathy may have side effects. Be sure to discuss these possible side effects with your doctor before taking any of these drugs.

Arrhythmogenic right ventricular dysplasia

If you have arrhythmogenic right ventricular dysplasia, your doctor may recommend treatment including:

- **Implantable cardioverter-defibrillator (ICD).** If you're at risk of dangerous heart rhythms, your doctor may recommend an ICD. An ICD monitors your heart rhythm and delivers electric shocks when needed to control abnormal heart rhythms.
- **Medications.** If an ICD isn't appropriate to treat your condition, or if you have an ICD and have frequent fast heart rhythms, your doctor may prescribe medications to regulate your heart rhythm.
- **Radiofrequency ablation.** If other treatments aren't controlling your abnormal heart rhythms, your doctor may recommend radiofrequency ablation.

In this procedure, doctors guide long, flexible tubes (catheters) through your blood vessels to your heart. Electrodes at the catheter tips transmit energy to damage a small spot of abnormal heart tissue that is causing the abnormal heart rhythm.

Ventricular assist devices (VADs)

Ventricular assist devices (VADs) can help blood circulate through your heart. They usually are considered after less invasive approaches are unsuccessful. These devices can be used as a long-term treatment or as a short-term treatment while waiting for a heart transplant.

Heart transplant

You may be a candidate for a heart transplant if medications and other treatments are no longer effective, and you have end-stage heart failure.

Your doctor may recommend adopting the following lifestyle changes to help you manage cardiomyopathy:

- Quit smoking.
- Lose weight if you're overweight.
- Eat a healthy diet, including a variety of fruits and vegetables and whole grains.
- Reduce the amount of salt in your diet, and aim for less than 1,500 milligrams of sodium daily.
- Get modest exercise after discussing with your doctor the most appropriate program of physical activity.
- Eliminate or minimize the amount of alcohol you drink. Specific recommendations will depend on the type of cardiomyopathy you have.
- Try to manage your stress.
- Get enough sleep.

- Take all your medications as directed by your doctor.
- Go to your doctor for regular follow-up appointments.

In many cases, you can't prevent cardiomyopathy. Let your doctor know if you have a family history of the condition.

You can help reduce your chance of cardiomyopathy and other types of heart disease by living a heart-healthy lifestyle and making lifestyle choices such as:

- Avoiding the use of alcohol or cocaine
- Controlling high blood pressure, high cholesterol and diabetes
- Eating a healthy diet
- Getting regular exercise
- Getting enough sleep
- Reducing your stress

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