
Heart Failure

What is heart failure?

The heart is a muscle that pumps oxygen-rich blood to all parts of the body. When you have heart failure, the heart can't pump as well as it should. Or the heart muscle can't relax and fill the pumping chamber with blood. Blood and fluid may back up into the lungs. This causes heart failure. And it causes pulmonary edema. Some parts of the body also don't get enough oxygen-rich blood. This means they can't work well. These problems lead to the symptoms of heart failure.

What causes heart failure?

Heart failure may result from:

- Heart valve disease
- High blood pressure
- Active infections of the heart valves or heart muscle, such as endocarditis
- A past heart attack
- Coronary artery disease
- Disease of the heart muscle (cardiomyopathy)
- Heart problems that are present at birth (congenital heart defects)
- Heart rhythm problems (arrhythmias)
- Long-term (chronic) lung disease and pulmonary embolism
- A reaction to medicines, such as those used for chemotherapy
- Anemia and too much blood loss
- Thyroid disorders
- Diabetes
- Alcohol and drug abuse
- Certain viral infections

What are the symptoms of heart failure?

The most common symptoms of heart failure are:

- Shortness of breath while resting, exercising, or lying flat
- Weight gain from water retention

- Visible swelling of the legs, ankles, and feet from fluid buildup. Sometimes the belly (abdomen) may swell.
- Severe tiredness (fatigue) and weakness
- Loss of appetite, nausea, and belly pain
- Cough that doesn't go away. It can cause blood-tinged or frothy sputum.

The severity of the condition and symptoms depends on how much of the heart's pumping ability has been affected. The first step in managing heart failure symptoms is knowing your baselines or what's normal for you. How much do you weigh? Are you gaining weight but eating the same amount? How much can you do before you feel short of breath? Do your socks and shoes fit comfortably? Knowing what's normal for you will help you see when symptoms are getting worse. Once you know your baselines, watch for changes daily.

The symptoms of heart failure may look like other health problems. Always see your healthcare provider for a diagnosis.

How is heart failure diagnosed?

Your healthcare provider will ask about your health history. They will give you a physical exam. You may need tests, such as:

- **Chest X-ray.** This test makes images of internal tissues, bones, and organs on film. This test shows the size and shape of your heart. Fluid in the lungs will also show up on X-ray.
- **Echocardiogram.** This test is also called an echo. It uses sound waves to assess the motion of the heart's chambers and valves. The sound waves make an image on the screen as an ultrasound transducer is passed over the heart. This shows how well the heart pumps and relaxes. It also shows the thickness of the heart walls, and if the heart is enlarged. It can assess heart valve function and blood flow as well. It is one of the most useful tests because it shows a lot of information about the heart's function. And it can help guide treatment choices.
- **Electrocardiogram.** This test records the electrical activity of the heart. It shows abnormal rhythms. It can sometimes find heart muscle damage.
- **BNP testing.** B-type natriuretic peptide (BNP) is a hormone released from the ventricles that occurs with heart failure. BNP levels are useful in the quick assessment of heart failure. The higher the BNP levels, the worse the heart failure. BNP is measured from a blood sample.
- **Cardiac MRI.** This test uses a magnetic field to make images of the heart and its nearby tissues. It can assess how the heart muscle and valves are working.

How is heart failure treated?

The cause of heart failure will guide the treatment plan. If heart failure is caused by a valve problem or coronary heart disease, then you may need a procedure. This may be a percutaneous coronary intervention. Or it may be surgery. If heart failure is caused by a problem, such as anemia or an infection, you may need medicine to treat this problem.

Some causes of heart failure are reversible or short-term, such as an acute infection. For many causes of heart failure there is no cure. But many forms of treatment can help with symptoms. They are listed below.

Lifestyle changes

These healthy habits may help with heart failure:

- Controlling blood pressure
- Controlling blood sugar if you have diabetes
- Quitting smoking
- Maintaining a healthy weight. Losing weight, if needed
- Regular exercise
- Limiting salt and fat in your diet
- Not drinking alcohol or using illicit drugs
- Getting enough rest
- Reducing stress
- Other important lifestyle habits include getting vaccines, such as for the flu and pneumococcal pneumonia.

If you have sleep problems, getting a sleep study can help find out what's causing them. You may need to wear a C-PAP mask while you sleep. This will make sure you get enough oxygen. Too little oxygen can put stress on your heart.

Medicines

Many types of medicines are available for heart failure. They include:

- **Angiotensin converting enzyme (ACE) inhibitors.** These lower the pressure inside the blood vessels. This reduces the pressure that the heart has to pump against. They can also help the heart have better pumping ability over time.
- **Angiotensin receptor blockers (ARB).** Some people get a cough and need to stop taking ACE inhibitors. If that happens, an ARB may work for you. These help relax blood vessels and reduce stress on the heart.
- **Angiotensin receptor-neprilysin inhibitors (ARNIs).** This medicine combines an ARB and a neprilysin inhibitor. This can help the heart as noted above. And it can promote salt and water loss. This medicine is preferred over ACE inhibitors and ARBs alone.
- **Diuretics.** These reduce the amount of fluid in the body. They are among the most important medicines in helping control fluid buildup in the body.
- **Beta-blockers.** These reduce the heart's tendency to beat faster. They can also help the heart pump better over time.

- **Aldosterone blockers.** These block the effects of the hormone aldosterone. This hormone causes sodium and water retention.
- **Vasodilators.** These include hydralazine and nitroglycerin. These widen (dilate) the blood vessels. They reduce the workload on the heart.
- **Statins or PCSK9 inhibitors.** These lower the amount of bad cholesterol in your blood. They are not used to treat heart failure. But you may take one if you have high cholesterol. Or you may take one if you have had a past heart attack and are at risk for heart failure. People who have inherited forms of high cholesterol (familial hypercholesterolemia) may get help from PCSK9 inhibitors. These medicines lower cholesterol.
- **Sodium-glucose cotransporter-2 (SGLT2) inhibitors.** They block your kidneys from reabsorbing sugar from the blood. This helps your body get rid of extra salt and water and so lowers your blood pressure. Lowering your blood pressure eases the strain on your heart.
- **Digitalis.** This medicine helps the heart beat stronger. It may help with controlling heart rate if there is an abnormal heart rhythm.
- **Antiarrhythmics.** These help keep normal heart rhythm.
- **Sinus node I-f channel blocker.** This may be used to lower your heart rate. It may result in less stress on your heart. This medicine is reserved for people who still have high resting heart rates despite use of beta blockers.

Heart procedures

These include opening blocked arteries in the heart. This brings back blood flow to the heart muscle. It helps the ventricles squeeze as they should. The procedure can be done in the cardiac catheterization lab. It uses balloons to push plaque and blood clots out of the artery. It also uses stents to keep the artery open. This can also be done by bypassing blockages during surgery (coronary artery bypass surgery).

Heart valve repair or replacement

In some cases, medicines can't help heart failure caused by heart valves that are narrowed (stenosed) or leak (regurgitant). The heart valve can be repaired or replaced. This can be done as an open-heart procedure. Or it can be done by going through a small tube (catheter) that is put into an artery or vein.

Pacemaker

If your heart failure has also damaged your heart's electrical wiring system, a pacemaker can be implanted. This is done to restore normal heart rate and regularity. A cardiac resynchronizing pacemaker is used when one of the natural heart wires is damaged. This is often the wire located in the left ventricle. These pacemakers use implanted left and right sided wires to restore normal timing of the heart contraction in order to improve heart function.

ICD (implantable cardioverter defibrillator)

When the heart muscle is damaged, dangerous heart circuits can form in the heart muscle. This leads to heart rhythms that can cause death. An ICD is implanted in the body to sense

and treat these cardiac arrest rhythms. It does this by overdrive pacing the heart rhythm. Or it sends an energy shock to the heart.

VAD (ventricular assist device)

This device is put in the chest during a surgery. It connects to an outside motor. The motor helps pump blood from the heart to the rest of the body. VADs can allow people with advanced heart failure to improve their overall symptoms and to walk more. This can be used as a long-term treatment. Or it can be used while someone waits for a donor heart for a transplant.

Heart transplant

In some cases, the diseased heart must be replaced with a healthy one from a donor.

Talk with your healthcare providers about the risks, benefits, and possible side effects of all treatments.

What are possible complications of heart failure?

Complications of heart failure include:

- Fluid buildup in the lungs (pulmonary edema)
- Kidney and liver failure
- Stroke
- Abnormal heart rhythms
- Death

How daily issues affect your health

Many things in your daily life impact your health. This can include transportation, money problems, housing, access to food, and child care. If you can't get to medical appointments, you may not receive the care you need. When money is tight, it may be difficult to pay for medicines. And living far from a grocery store can make it hard to buy healthy food.

If you have concerns in any of these or other areas, talk with your healthcare team. They may know of local resources to assist you. Or they may have a staff person who can help.

Key points about heart failure

- When you have heart failure, the heart can't pump as well as it should.
- Heart failure may result from health problems that affect the heart, such as high blood pressure, coronary artery disease, and heart attack.
- Some common symptoms are shortness of breath, weight gain, and visible swelling of the legs and ankles.
- A chest X-ray can help diagnose lung congestion.

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- Treatment varies based on the cause of heart failure. Most people are advised to make certain lifestyle changes and to take certain medicines, often for life. Procedures, such as coronary intervention and surgery, may be needed.

Next steps

Tips to help you get the most from a visit to your healthcare provider:

- Know the reason for your visit and what you want to happen.
- Before your visit, write down questions you want answered.
- Bring someone with you to help you ask questions and remember what your provider tells you.
- At the visit, write down the name of a new diagnosis, and any new medicines, treatments, or tests. Also write down any new instructions your provider gives you.
- Know why a new medicine or treatment is prescribed, and how it will help you. Also know what the side effects are.
- Ask if your condition can be treated in other ways.
- Know why a test or procedure is recommended and what the results could mean.
- Know what to expect if you do not take the medicine or have the test or procedure.
- If you have a follow-up appointment, write down the date, time, and purpose for that visit.
- Know how you can contact your healthcare provider if you have questions, especially after office hours or on weekends.