Congestive Heart Failure

Heart failure is a condition in which the heart can't pump blood the way it should. In some cases, the heart can't fill with enough blood. In other cases, the heart can't send blood to the rest of the body with enough force. Some people have both problems.
"Heart failure" doesn't mean that your heart has stopped or is about to stop working. However, it's a serious condition that requires medical care.

Overview

Heart failure develops over time as the pumping of the heart grows weaker. It can affect the right side of the heart only or both the left and right sides of the heart. Most cases involve both sides of the heart.
Right-side heart failure occurs when the heart can't pump blood to the lungs, where it picks up oxygen. Left-side heart failure occurs when the heart can't pump enough oxygen-rich blood to the rest of the body.

Right-side heart failure may cause fluid to build up in the feet, ankles, legs, liver, abdomen, and, rarely, the veins in the neck. Right-side and left-side heart failure also cause shortness of breath and fatigue (tiredness).
The leading causes of heart failure are diseases that damage the heart. These include coronary artery disease (CAD), high blood pressure, and diabetes.

Outlook

Heart failure is a very common condition. About 5 million people in the United States have heart failure, and it results in about 300,000 deaths each year.
Both children and adults can have heart failure, although the symptoms and treatments differ. This article focuses on heart failure in adults.
Taking steps to prevent CAD can help prevent heart failure. These steps include following a heart healthy diet, not smoking, doing physical activity, and losing weight if you're overweight or obese. Working with your doctor to control high blood pressure and diabetes also can help prevent heart failure.
People who have heart failure can live longer and more active lives if it's diagnosed early and they follow their treatment plans. For most, treatment includes medicines and lifestyle measures.
Currently, there's no cure for heart failure. However, researchers are finding and testing new treatments. These treatments offer hope for better ways to delay heart failure and its complications.

Other Names for Heart Failure

Left-side, or systolic, heart failure. This is when the heart can't pump enough oxygen-rich blood to the body.
Right-side, or diastolic, heart failure. This is when the heart can't fill with enough blood.
Some people have only right-side heart failure. But all people who have left-side heart failure also have right-side heart failure. Treatments for right-side heart failure alone differ from treatments for both right-side and left-side heart failure. Your doctor will plan your treatment based on your type of heart failure and your unique needs.

What Causes Heart Failure?

Conditions that damage the heart muscle or make it work too hard can cause heart failure. Over time, the heart weakens. It isn't able to fill with and/or pump blood as well as it should.
As the heart weakens, certain proteins and other substances may be released into the blood. They have a toxic effect on the heart and blood flow, and they cause heart failure to worsen.

Major Causes

The most common causes of heart failure are coronary artery disease (CAD), high blood pressure, and diabetes. Treating these problems can prevent or improve heart failure.

Coronary Artery Disease

CAD occurs when a fatty material called plaque (plak) builds up in your coronary arteries. These arteries supply oxygen-rich blood to your heart. Plaque narrows the arteries, causing less blood to flow to your heart muscle. This can lead to chest pain,heart attack, and heart damage.

High Blood Pressure

Blood pressure is the force of blood pushing against the walls of the arteries. Blood pressure is “high” if it stays at or above 140/90 mmHg over a period of time. High blood pressure stiffens blood vessels and makes the heart work harder. Without treatment, the heart may be damaged.

Diabetes

This disease occurs when the level of sugar in the blood is high. The body doesn't make enough insulin or doesn't use its insulin properly. Insulin is a hormone that

helps convert food to energy. High sugar levels can damage blood vessels around the heart.

Other Causes

Other diseases and conditions that can lead to heart failure are:

- Heart muscle diseases. These diseases may be present at birth or due to injury or infection.
- Heart valve disorders. These problems may be present at birth or due to infections, heart attacks, or damage from heart disease.
- Arrhythmias (ah-RITH-me-ahs), or irregular heartbeats. These heart problems may be present at birth or due to heart disease or heart defects.
- Congenital heart defects. These heart problems are present at birth.

Other factors also can injure the heart muscle and lead to heart failure. These include:

- Treatments for cancer, such as radiation and chemotherapy
- Thyroid disorders (having either too much or too little thyroid hormone in the body)
- Alcohol abuse
- HIV/AIDS
- Cocaine and other illegal drug use
- Too much vitamin E
- Heart damage from obstructive sleep apnea may cause heart failure to worsen. In obstructive sleep apnea, your breathing stops or gets very shallow while you're sleeping. This can deprive the heart of oxygen and increase its workload. Treating this sleep problem may improve heart failure.

Who Is At Risk for Heart Failure?

About 5 million people in the United States have heart failure, and it results in about 300,000 deaths each year. The number of people who have heart failure is growing. Each year, another 550,000 people are diagnosed for the first time. Heart failure is more common in:

- People who are 65 or older. Aging can weaken the heart muscle. Older people also may have had a disease for many years that causes heart failure. Heart failure is the #1 reason for hospital visits in this age group.
- African Americans. African Americans are more likely than people of other races to have heart failure and to suffer from more severe forms of it. They're also more likely than other groups to have symptoms at a younger

age, get worse faster, have more hospital visits due to heart failure, and die from heart failure.

- People who are overweight or obese. Excess weight puts a greater strain on the heart. It also can lead to type II diabetes, which adds to the risk of heart failure.
- Men have a higher rate of heart failure than women. But in actual numbers, more women have the condition. This is because many more women than men live into their seventies and eighties when it's common.
- Children with congenital heart defects also can develop heart failure. Children are born with these defects when the heart, heart valves, and/or blood vessels near the heart don't form correctly. This can weaken the heart muscle and lead to heart failure.
- Children don't have the same symptoms or get the same treatment for heart failure as adults. This article focuses on heart failure in adults.

What Are the Signs and Symptoms of Heart Failure?

The most common signs and symptoms of heart failure are:

- Shortness of breath or trouble breathing
- Fatigue (tiredness)
- Swelling in the ankles, feet, legs, abdomen, and, rarely, the veins in your neck
- All of these symptoms are due to the buildup of fluid in your body. When symptoms start, you may feel tired and short of breath after routine physical effort—like climbing stairs.
- As the heart grows weaker, symptoms get worse. You may begin to feel tired and short of breath after getting dressed or walking across the room. Some people have shortness of breath while lying flat.
- Fluid buildup from heart failure also causes weight gain, frequent urination, and a cough that's worse at night and when you're lying down. This cough may be a sign of a condition called acute pulmonary (PULL-mun-ary) edema (e-DE-ma). This is when too much fluid is in your lungs. This severe condition requires emergency treatment.

How Is Heart Failure Diagnosed?

Your doctor will diagnose heart failure based on your medical and family histories, a physical exam, and tests. Because the symptoms of heart failure also are common in other conditions, your doctor must:

- Find out whether you have a disease or condition that can cause heart failure, such as coronary artery disease (CAD), high blood pressure, or diabetes
- Rule out other causes of your symptoms
- Find any damage to your heart and measure how well your heart pumps blood
  Early diagnosis and treatment can help people with heart failure live longer, more active lives.
- Medical and Family Histories
  Your doctor will ask whether you or others in your family have or have had a disease or condition that can cause heart failure.
- Your doctor also will ask about your symptoms. He or she will want to know which symptoms you've have, when they occur, how long you've had them, and how severe they are. The answers will help show whether and how much your symptoms limit your daily routine.
- Physical Exam
  - During the physical exam, your doctor will:
  - Listen to your heart for sounds that aren't normal
  - Listen to your lungs for the sounds of extra fluid buildup
  - Look for swelling in your ankles, feet, legs, abdomen, and the veins in your neck
- Diagnostic Tests
  No one test shows whether you have heart failure. If you have signs and symptoms of heart failure, your doctor may order an EKG (electrocardiogram), a chest x ray, and a BNP blood test as initial tests.
- Initial Tests
  EKG. This simple test shows how fast your heart is beating and whether its rhythm is steady or irregular. An EKG may show whether you have had a heart attack or whether the walls in your heart's pumping chambers are thicker than normal. Thicker walls can make it harder for your heart to pump blood.
- Chest x ray. A chest x ray takes a picture of your heart and lungs. It can show whether your heart is enlarged, whether you have fluid in your lungs, or whether you have lung disease.
- BNP blood test. This new test checks the level of a hormone called BNP, which rises during heart failure.

Followup Tests

Your doctor may refer you to a cardiologist if your initial test results indicate heart

failure. A cardiologist is a doctor who specializes in treating people with heart problems.
The cardiologist will likely order one or more other tests to confirm the diagnosis.

- Echocardiography. Echocardiography uses sound waves to create a moving picture of your heart. It shows the size and shape of your heart and how well parts of your heart are working. The test also can show where blood flows poorly to the heart, where the heart muscle doesn't contract as it should, and damage to the heart muscle caused by poor blood flow.
  Sometimes this test is done both before and after your heart is put through physical stress (see stress testing below). Testing under stress helps show whether there's a lack of blood flow to your heart (a sign of CAD).
- Doppler imaging. A Doppler test uses sound waves to measure the speed and direction of blood flow. It's often done with an echocardiogram to give a more complete picture of blood flow to the heart and lungs.
  Doppler is often used to find out whether you have right-side heart failure (this is when the heart can't fill with enough blood).
- Holter monitor. A Holter monitor is a small box that you carry in a pouch around your neck or clipped to your belt. It's attached to sticky patches called electrodes that are placed on your chest. The device records your heart rhythm for a full 24- or 48-hour period, while you do your normal daily activities.
- Nuclear heart scan. A nuclear heart scan is a test that shows how well blood is passing through your heart and how much blood is reaching your heart muscle.
  Your doctor will inject a radioactive substance into your bloodstream, which will make your heart chambers and vessels easy to see. Then, a special camera is used to show where the substance lights up (in healthy heart muscle) and where it doesn't (in damaged heart muscle).
- Cardiac catheterization. During cardiac catheterization (KATH-e-ter-i-ZA-shun), a long, thin, flexible tube called a catheter is put into a blood vessel in your arm, groin (upper thigh), or neck and threaded to your heart. This allows your doctor to study the insides of your coronary arteries. Coronary arteries carry oxygen-rich blood to your heart.
  During this procedure, your doctor can check the pressure and blood flow in the heart's chambers, collect blood samples, and use x rays to look at the coronary arteries.
- Coronary angiography. Coronary angiography (an-jee-OG-ra-fee) is usually done with cardiac catheterization. A dye that can be seen on x ray is injected into the blood through the tip of the catheter. The dye allows your doctor to

see the flow of blood to the heart muscle. This test also shows how well your heart is pumping.

Stress test. Some heart problems are easier to diagnose when your heart is working harder and beating faster than when it's at rest. During stress testing, you exercise (or are given medicine if you can't exercise) to make your heart work harder and beat faster. You may walk or run on a treadmill or pedal a bicycle.

Heart tests, such as nuclear heart scanning and echocardiography, are done during stress testing.

- Cardiac magnetic resonance imaging (MRI). A cardiac MRI scan shows, in detail, the structures and beating of your heart. An MRI scan can help your doctor see whether parts of your heart are damaged. Doctors also are using MRI in research studies to find early signs of heart failure, even before symptoms appear
- Positron emission tomography (PET). PET scanning shows the level of chemical activity in areas of your heart. This scan can help your doctor see whether enough blood is flowing to these areas. It can show blood flow problems that other types of scans may not pick up.
- Thyroid function tests. Thyroid function tests show how well the thyroid is working. They include blood tests, imaging tests, and tests to stimulate the thyroid. These common tests are key in checking for heart failure. Having too much or too little thyroid hormone in the blood can cause heart failure.

How Is Heart Failure Treated?

Early diagnosis and treatment can help people with heart failure live longer, more active lives. How heart failure is treated will depend on your type and stage of heart failure (how severe it is).

The goals of treatment for all stages of heart failure are to:

- Treat the underlying cause of your heart failure, such as coronary artery disease (CAD), high blood pressure, or diabetes
- Reduce your symptoms
- Stop your heart failure from getting worse
- Increase your lifespan and improve your quality of life
- For people with any stage of heart failure, treatment will include lifestyle measures, medicines, and ongoing care.
- People who have more severe heart failure also may need medical procedures and surgery.

- Lifestyle Measures
  You can take simple steps to help yourself feel better and control heart failure. The sooner you start these measures, the better off you're likely to be.
- Follow a Healthy Eating Plan
  A diet low in salt, fat, saturated fat, trans fat, and cholesterol can help you prevent or control heart failure. Salt can cause extra fluid to build up in your body, making heart failure worse. Fat and saturated fat can increase your blood cholesterol levels. Transfat raises your LDL ("bad") cholesterol and lowers your HDL ("good") cholesterol. High blood cholesterol can cause heart disease, which in turn can cause heart failure.
  A balanced diet with varied nutrients can help your heart work better. Getting enough potassium is key for people with heart failure. Some heart failure medicines deplete the potassium in your body. This can put people with heart failure in danger. Lack of potassium can cause very rapid heart rhythms that lead to sudden death.
  Potassium is found in foods like bananas, strawberries, raisins, beets, and greens. Talk to your health care team about getting the correct amount of potassium.
  If you have heart failure, you shouldn't drink alcohol. If you have severe heart failure, your doctor may advise you to limit the amount of fluids that you drink.
- Adopt Healthy Habits
  Taking steps to control risk factors for CAD, high blood pressure, and diabetes also will help control heart failure.
  Lose weight if you're overweight or obese. Work with your health care team to lose weight safely.
  Do physical activity as your doctor directs to become more fit and stay as active as possible.
  Quit smoking and avoid using illegal drugs. Avoid exposure to secondhand smoke. Smoking and drugs can worsen heart failure and harm your health.
  Get enough rest.

Medicines

- Your doctor will base your medicine treatment on the type of heart failure you have, how severe it is, and your response to certain medicines. The following are the main medicines for treating heart failure.
- Diuretics (water or fluid pills) help reduce fluid buildup in your lungs and swelling in your feet and ankles.

- ACE inhibitors lower blood pressure and reduce strain on your heart. They also may reduce the risk of a future heart attack.
- Aldosterone antagonists trigger the body to get rid of salt and water through urine, which lowers the volume of blood that the heart must pump.
- Angiotensin receptor blockers relax your blood vessels and lower blood pressure, so the heart doesn't have to work as hard
- Beta blockers slow your heart rate and lower your blood pressure to decrease the workload on your heart.
- Isosorbide dinitrate/hydralazine hydrochloride helps relax your blood vessels, so your heart doesn't work as hard to pump blood. The Food and Drug Administration approved this medicine for use in African Americans after studies showed it worked well for this group.
- Digoxin makes the heart beat stronger and pump more blood.
- Many people with severe heart failure must be treated in the hospital from time to time. In the hospital, you may receive new or special medicines, but you will keep taking your other medicines too. Some people with very severe heart failure are given intravenous (IV) medicines, which are injected into veins in their arms.

  Your doctor also will order extra oxygen if you take medicine but still have trouble breathing. The extra oxygen can be given in the hospital and at home.

Ongoing Care

It's important to watch for signs that heart failure is getting worse. Weigh yourself each day. Let your doctor know right away if you have a sudden weight gain or weight loss. Either one can signal a need to adjust your treatment. If your doctor advises you to limit your intake of fluids, carefully watch how much you drink during the day.

It's also important to get medical care for other related conditions. If you have diabetes and/or high blood pressure, work with your health care team to control your condition(s). Have your blood sugar level and blood pressure checked. Your doctor will tell you how often to come in for tests and how often to take measurements at home.

Medical Procedures and Surgery

As heart failure worsens, lifestyle changes and medicines may no longer control heart failure symptoms. You may need a medical procedure or surgery.

If you have heart damage and severe heart failure symptoms, you may need:

Cardiac resynchronization therapy. In heart failure, the right and left sides of the heart may no longer contract at the same time. This disrupts the heart's pumping.

To correct this problem, doctors may implant a type of pacemakernear your heart. This device helps both sides of the heart contract at the same time, which may decrease heart failure symptoms.
An implantable cardioverter defibrillator (ICD). Some people with heart failure have very rapid, irregular heartbeats. Without treatment, the problem can causesudden cardiac arrest. Doctors implant ICDs to solve this problem. ICDs are similar to pacemakers. The device checks your heart rate and corrects heart rhythms that are too fast.

People who have heart failure symptoms at rest despite other treatments may need:

A mechanical heart pump, such as a left ventricular assist device. This device helps pump blood from the heart to the rest of the body. People may use pumps until they have surgery or as a long-term treatment.
Heart transplant. When all other treatments fail to control symptoms, some people who have heart failure receive healthy hearts from deceased donors.
Experimental treatments. Studies are under way to see whether open-heart surgery or angioplasty (a procedure used to unblock heart arteries and improve blood flow) can reduce heart failure symptoms.

Ongoing Research

Researchers continue to learn more about heart failure and how to treat it. As a result, treatments are getting better.
People with heart failure often can be treated in a research study. You get top care from heart failure experts and the chance to help advance heart failure knowledge and care.
You also may want to take part in a heart failure registry, which tracks the course of disease and treatment in large numbers of people. These data help research move forward. You may help yourself and others by taking part. Talk to your health care team to learn more.

How Can Heart Failure Be Prevented?

You can take steps to prevent heart failure. The sooner you start, the better your chances to avoid it or to stay healthier longer.

For People Who Have Healthy Hearts

If you have a healthy heart, you can take action to prevent heart disease, which helps prevent heart failure. To prevent heart disease:

- Follow a heart healthy diet that focuses on fruits, vegetables, whole grains, low-fat diary products, and lean meat. It also should be low in salt, fat,

saturated fat,trans fat, and cholesterol. Examples of healthy eating plans are the National Heart, Lung, and Blood Institute's Therapeutic Lifestyle Changes (TLC) diet and the Dietary Approaches to Stop Hypertension (DASH) eating plan.

- Quit smoking if you smoke. Avoid exposure to secondhand smoke.
- Lose weight if you're overweight or obese.
- Get regular physical activity. Aim for at least 30 minutes on most, and preferably all, days of the week.
- Avoid using illegal drugs.
- For People Who Are at High Risk for Heart Failure
- Even if you're at high risk for heart failure, you can take steps to reduce your risks. People at high risk include those who have high blood pressure, coronary artery disease, or diabetes, or people who are obese.
- Treat and control any conditions that cause heart failure. Take medicines as your doctor prescribes.
- Avoid drinking alcohol.
- See your doctor for regular followup visits.

For People Who Have Heart Damage but No Signs of Heart Failure

If you have heart damage but no signs of heart failure, you can still reduce your risks. In addition to taking the steps above, take all of the medicines your doctor prescribes to reduce your heart's workload.

Heart failure can't be cured. You will likely have to take medicine and follow a treatment plan for the rest of your life.

Despite treatment, symptoms may get worse over time. You may not be able to do many of the things that you did before you had heart failure. However, if you take all the steps your doctor recommends, you can stay healthier longer.

Follow Your Treatment Plan

Treatment can relieve your symptoms and make daily activities easier. It also can reduce the chance that you'll have to go to the hospital. For these reasons, it's vital that you follow your treatment plan.

Take all of your medicines as your doctor prescribes. If you have side effects from a medicine, tell your doctor. You should never stop taking medicine without asking your doctor first.

Make all of the lifestyle changes that your doctor recommends.

Get advice from your doctor about how active you can/should be. This includes advice on daily activities, work, leisure time, sex, and exercise. Your level of

activity will depend on the stage of your heart failure (how severe it is). Studies show that aerobic exercise improves heart function; other types of exercise don't.

Keep all of your medical appointments, including visits to the doctor and appointments to get tests and lab work. Your doctor needs the results of these tests to adjust your medicine doses and help you avoid any harmful side effects.

Certain factors can cause your heart failure to worsen. These include:

- Forgetting to take your medicines
- Not following your diet (such as eating salty foods)
- Drinking alcohol
- These factors can lead to a hospital stay. If you have trouble following your diet, talk to your doctor. Your doctor can help arrange for a dietitian to work with you. Avoid drinking alcohol.

People with heart failure often have other serious conditions that require ongoing treatment. If you do, you're likely taking medicines for them as well as for heart failure. Taking more than one medicine raises the risk of side effects and other problems. Make sure your pharmacist has a complete list of all of the medicines and over-the-counter products that you're taking.
Tell your doctor right away about any problems with your medicines. Also, talk with your doctor before taking any new medicine another doctor prescribes or any new over-the-counter medicines or herbal supplements.
Try to avoid respiratory infections like the flu and pneumonia. Ask your doctor or nurse about getting flu and pneumonia vaccines.
Coping with heart failure and changing your life to decrease symptoms can be hard. You may feel depressed. If so, talk to your doctor. He or she may recommend treatment for depression. This treatment can improve your outlook and help you enjoy life more.

Plan Ahead

Be ready to meet your health needs. Know:
When to seek help. Talk to your doctor about when to make an office visit or when to get urgent help.
Phone numbers for your doctor and hospital.
Directions to the doctor's office or hospital and people who can take you there.
A list of medicines you're taking.

Key Points

- Heart failure is a condition in which your heart can't pump blood the way it should. In some cases, the heart can't fill with enough blood. In other cases, the heart can't send blood to the rest of the body with enough force. Some people have both problems.
- "Heart failure" doesn't mean that your heart has stopped or is about to stop working. However, it's a serious condition that requires medical care.
- The leading causes of heart failure are diseases that damage the heart. These include coronary artery disease, high blood pressure, and diabetes. Heart failure develops over time as the pumping action of the heart grows weaker.
- Heart failure is a common condition. About 5 million people in the United States have heart failure, and it results in about 300,000 deaths each year. Heart failure is more common in people who are 65 or older, African American, or overweight or obese. Men have a higher rate of heart failure than women.
- Common signs and symptoms of heart failure are shortness of breath or trouble breathing, fatigue (feeling tired), and swelling in the ankles, feet, legs, abdomen, and, rarely, the veins in the neck. All of these symptoms are due to fluid buildup in your body.
- Your doctor will diagnose heart failure based on your medical and family histories, a physical exam, and tests. He or she must rule out other causes for symptoms and find out whether you have a disease or condition that's causing heart failure. He or she also will check whether your heart is damaged and how well it pumps blood.
- Heart failure treatment may include lifestyle measures, medicines, ongoing care, and using a medical device or having surgery. The sooner you start treatment, the better off you're likely to be.
- You can take steps to prevent heart failure by having a healthy lifestyle, preventing and treating conditions that can lead to heart failure, and taking medicines as your doctor prescribes.
- Heart failure can't be cured. You will likely need to take medicine and follow a treatment plan for the rest of your life. Despite treatment, your symptoms may get worse over time. Following your treatment plan, taking steps to prevent heart failure from getting worse, and planning ahead can help you stay healthier longer.

  Researchers are finding and testing new treatments for heart failure. These treatments offer hope for the future. Talk to your doctor about whether research studies may benefit you.