

ADVANCED HEART FAILURE TREATMENT GUIDE

Heart failure is a condition affecting nearly 6 million adults in the United States. If you have heart failure, you may have questions, whether you were diagnosed recently or have been living with the condition for years.

Though heart failure is a chronic condition, there are many effective therapies proven to improve symptoms, quality of life and life expectancy of patients. At Vanderbilt Health, we are dedicated to helping you manage this treatable condition. The following guide addresses common questions about heart failure and covers risk factors, symptoms and treatments.

If you have specific questions about your care after reading this guide, please ask your doctor. We hope this is a valuable resource for you.

Understanding Heart Failure

If you have heart failure, your heart muscle is not working as well as it should. While the condition is treatable, it does not go away and often progresses over time.

Your body depends on the pumping of your heart to deliver oxygen and nutrients to your body's cells. The body has the fuel it needs to function normally. With heart failure, your weakened heart cannot supply the cells with enough blood. Everyday activities such as walking, climbing stairs or carrying a basket of laundry are very challenging. Heart failure can occur in four stages. (These are defined by the American College of Cardiology and American Heart Association.)

Stage A: At risk for developing heart failure.

Stage B: Diagnosed with heart failure but has no detectable symptoms.

Stage C: Diagnosed with heart failure and has recognizable symptoms.

Stage D: The most severe form, also known as advanced heart failure.



Advanced heart failure may be the final stage of a long illness. Patients with advanced heart failure may begin to have symptoms even when resting. Some patients' heart failure may get worse slowly, even with years of treatment. Other patients may suddenly develop heart failure after a heart attack or viral infection.

Two Types of Heart Failure

Heart failure is categorized into two types: systolic and diastolic.

In systolic heart failure, the left lower chamber of the heart cannot pump with enough force. This reduces the amount of blood pumped out when your heart beats.

In diastolic heart failure, the heart's lower chambers are stiff. Your heart can't relax and fill with enough blood.

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Nearly 6 million adults in the U.S. have heart failure, according to the Centers for Disease Control and Prevention (CDC).

Symptoms of Heart Failure

You may have heart failure without any symptoms. Symptoms may be mild to severe. And they can also come and go.

Some common symptoms are:

- Shortness of breath or difficulty breathing while active, at rest or when lying down. *Note: Shortness of breath may cause people to awaken suddenly. They may need to sit up to breathe or to sleep with pillows propping them up.*
- Rapid or irregular heartbeat
- Dry, hacking cough or wheezing
- Need to urinate while resting at night. This happens because gravity forces more blood to the heart and kidneys.
- Weight gain and swollen ankles, legs or abdomen. Less blood flows to the kidneys. This causes the body to retain fluid.

Risk Factors and Possible Causes

The heart's ability to pump blood naturally declines as we age. Heart failure happens when the added stress of health conditions damages the heart or causes it to overwork. The same risk factors that put you at risk of heart attack and stroke can contribute to heart failure.

These include:

- Smoking or tobacco use
- Excessive alcohol use
- Being very overweight
- Drug use
- A high-fat or high-cholesterol diet
- Lack of physical activity

Heart failure may be caused by one or more conditions that create “wear and tear” that leads to heart failure. Having more than one of these conditions dramatically increases your risk.

Coronary artery disease: The buildup of cholesterol and fatty deposits can limit blood flow to your heart. You may have chest pain, or, if blood flow is totally blocked, a heart attack.

High blood pressure: Uncontrolled high blood pressure is a major risk for developing heart failure. When the pressure in your blood vessels is too high, your heart must pump harder to keep blood flowing. Over time, your heart’s chambers may become larger and weaker and may thicken and become stiff.

Heart muscle disease: The heart muscle can be affected by a number of problems. These problems often have a genetic cause, but inflammation of the heart, called myocarditis, may also occur. With the genetic form, called cardiomyopathy, screening family members may be helpful to determine if they have the same genetic abnormality.

Prior heart attack: A heart attack occurs when blood flow to the heart muscle suddenly stops or is severely reduced. Part of the muscle is injured or dies and is replaced with scar tissue. The damaged heart tissue does not contract as well. This weakens the heart’s ability to pump blood.

Complex heart valve disease: Your heart’s valves keep blood flowing in the right direction. With heart valve disease, one of the four valves is damaged or defective. If valves don’t open or close properly, this can disrupt blood flow to the rest of your body.

Congenital heart disease: This means something was wrong with a part of the heart at birth. The rest of the heart is often strained by the abnormalities, leading to heart failure.

Sleep apnea: A lack of oxygen from breathing issues during sleep can increase the risk for high blood pressure and heart failure.

Severe lung disease: If the lungs don’t work right, the heart works harder to get available oxygen to the rest of the body.

Treatment for Heart Failure

Early Treatment Options

There are many treatments available that can reduce your risk of developing heart failure and also improve your symptoms and prolong life expectancy if you do develop heart failure.

Treating risk factors for coronary artery disease can prevent heart attacks and reduce your risk of heart failure. Recommendations include:

- Regular exercise
- Quitting smoking
- Treating high blood pressure
- Treating lipid (cholesterol) disorders
- Stopping the use of alcohol and certain drugs

Once heart failure is present, there are numerous medications that can improve symptoms and quality of life, reduce hospitalization for heart failure and prolong life expectancy. These include:

- An angiotensin converting enzyme (ACE) inhibitor, an angiotensin II receptor blocker (ARB) or an angiotensin-receptor/neprilysin inhibitor (ARNI)
- An aldosterone antagonist
- A beta blocker
- A hydralazine/nitrate combination
- A diuretic
- An SGLT2 inhibitor
- Digoxin

Implantable devices can also help to improve heart function, monitor for arrhythmias and measure the right amount of fluid removal.

Additionally, your doctor may tell you to eat a heart-healthy, low-sodium diet (fewer than 2,000 mg per day) and drink less fluids.

Progression of Heart Failure

If you find yourself more tired or short of breath and less able to perform routine activities or exercise, your heart disease may be getting worse.

Additional Treatment Options

You and your doctor should talk about whether surgery or other procedures are right for you. These may be options for patients with coronary artery blockage, heart attack and heart valve problems.

Pacemakers and defibrillators: A pacemaker may be implanted to make your heart beat better. Implanted cardioverter defibrillators are internal “shock paddles” that automatically correct an irregular heartbeat. Specialists called electrophysiologists will work with your care team and monitor you closely.

Cardiac resynchronization: Cardiac electrophysiologists will implant a device through the blood vessels and into the heart to make your heart’s chambers contract in a more organized and efficient way. This often helps patients with severe advanced heart failure.

Left ventricular assist device (LVAD): For people in the hospital with end-stage systolic heart failure, an LVAD can be a “bridge to transplant.” The LVAD is inserted into the body through a vein or artery in the groin or directly through the heart muscle. The device pumps blood to the body to support the heart.

Tandem Heart Program: Vanderbilt Heart and Vascular Institute is the first center in Tennessee to implant the TandemHeart® device. This LVAD is implanted through the skin and can provide temporary support for very ill patients waiting for a transplant.



Patients whose symptoms are caused by damage to the heart arteries or valves may also have the following options:

High-risk coronary revascularization: Blocked or damaged arteries are repaired or replaced through surgery (like cardiac bypass). This restores blood flow to the heart.

Complex valvular reconstruction: Procedures to rebuild heart valves can help valves open and close better.

Ventricular remodeling surgery: This surgery can restore the heart to its normal size, shape and function following injury from a heart attack.

Heart Transplant

A heart transplant may be the only option for individuals with very advanced heart disease or who don't respond to other treatments.

This course of treatment begins by placing a team of experts around you. Your team will include experts from cardiology and cardio-thoracic surgery, nutrition, rehabilitative medicine, and more. They will guide you through the four steps of transplant.

Evaluation and education: Our transplant team reviews your medical history, test results and psychosocial factors. This in-depth screening determines how likely a transplant is to be successful. In addition, our team educates you about the entire process. This helps you decide if a transplant is the right choice for you.

Waiting list: If you're healthy enough and meet all other requirements, you are placed on a wait list for a donor heart. Potential recipients must not use drugs or tobacco for at least six months before going on a wait list (and for the rest of their lives).

Surgery: Half of our patients are transplanted within two months of being listed. Transplant surgery removes the failing heart, leaving the back walls of the atria, which are the heart's upper chambers. The donor heart is sewn in and the blood vessels reconnected, enabling blood to flow through your new heart to your body. The operation generally takes between six and 10 hours.

Ongoing care: After surgery, you must follow a strict medical plan involving appointments and daily medications. Before you go home, we will provide guidance and detailed instruction about medications, home care and support.

Why Vanderbilt Heart?

Vanderbilt Heart and Vascular Institute has extensive experience in treating patients with heart failure from Middle Tennessee and across the Southeast. We have the expertise to care for all stages and causes of heart failure, from the most basic to the most complex. Our one-year survival rate is 92.11 percent.

Our highly skilled team includes cardiac and transplant surgeons, cardiologists, nurse practitioners, social workers, dietitians, psychologists, pharmacists and infectious disease physicians. We all share the same goal: to successfully treat your condition so that you can live a full and fulfilling life.