

Heart Failure Treatment Guide

As your partner in care, we are dedicated to helping you get better. We developed this guide to answer common questions about heart failure, including risk factors, symptoms and treatment options. If you have any specific questions about your care after reading this, please discuss them with your physician. We hope this is a valuable resource for you on your journey to better.

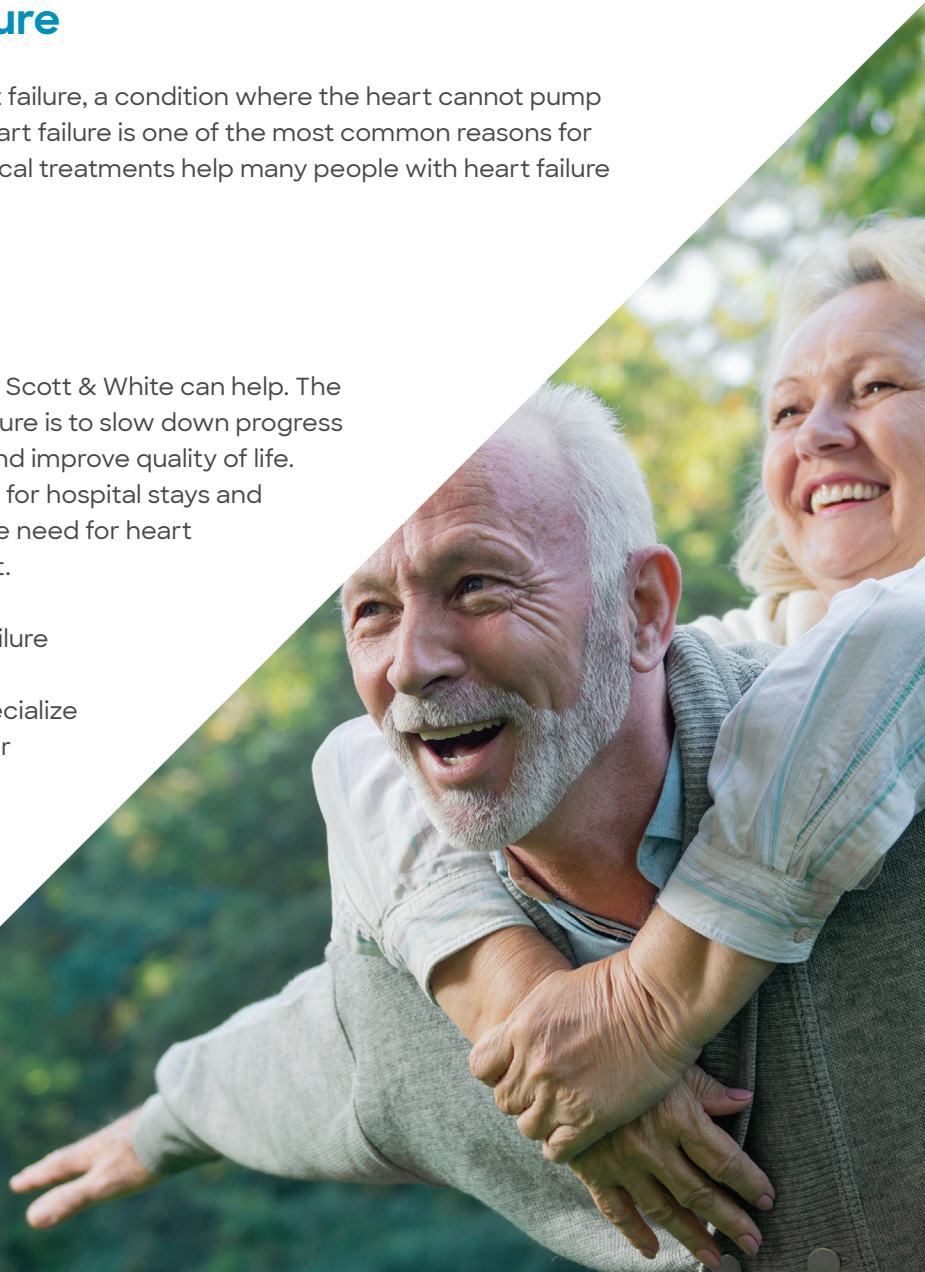
Understanding Heart Failure

About 5.7 million people in the US have heart failure, a condition where the heart cannot pump enough blood to meet the body's needs. Heart failure is one of the most common reasons for hospitalizations. The good news is that medical treatments help many people with heart failure live longer, better quality lives.

Choosing your care

If you have heart failure, experts from Baylor Scott & White can help. The main goal of treating a person with heart failure is to slow down progress of the disease. This can reduce symptoms and improve quality of life. Slowing down heart failure lessens the need for hospital stays and decreases the risk of death. It also lowers the need for heart failure treatments, including heart transplant.

Some patients may need advanced heart failure treatment. When that happens, we have an inter-professional team of clinicians who specialize in heart failure to provide the best options for care. We provide a healing environment for patients, where cardiologists, cardiac surgeons, nurses, registered dietitian nutritionists, social workers, cardiac rehabilitation professionals, and researchers work together to help treat people who have heart failure.



What is heart failure?

Heart failure is sometimes called congestive heart failure. It occurs when your heart muscle is not working as well as it should. Heart failure is a long-term disease that does not go away.

The most common reasons people get heart failure are:

- high blood pressure (*hypertension*)
- coronary artery disease (*atherosclerosis*)
- diabetes (*high blood sugar*)
- cardiomyopathy (*a disease of the heart muscle*)
- valvular heart disease
- metabolic syndrome
- a history of alcohol or drug misuse

The American College of Cardiology and American Heart Association list four Stages of Heart Failure:

- **Stage A** - at risk to develop heart failure
- **Stage B** - diagnosis of heart failure but no symptoms
- **Stage C** - diagnosis of heart failure with symptoms
- **Stage D** - the most severe; advanced heart failure

Advanced heart failure may be the final stage of a long illness. Patients may slowly get worse over years of treatment. They have symptoms at rest, more symptoms even with the best medical care, and very poor quality of life.

Other patients may be perfectly healthy and suddenly develop severe heart failure after a heart attack or when a viral infection attacks the heart muscle. Other conditions also can cause sudden, serious heart failure.

There are two main types of heart failure. Systolic heart failure, or heart failure with reduced ejection fraction (EF), occurs when the left ventricle (lower left chamber of the heart muscle) cannot squeeze with enough force. Diastolic heart failure, or heart failure with preserved EF, is present if the heart ventricles (lower chambers) are stiff and cannot relax to fill with enough blood.

More about the ejection fraction

What EF numbers mean:

EF%	= Percentage of blood pumped when heart beats
50% to 70%	= Normal
41% to 49%	= Borderline or below normal
Under 40%	= Reduced ejection fraction

May be at risk for life-threatening irregular heartbeats or uncoordinated movement of the heart muscle.

What are the symptoms of heart failure?

You may not have any symptoms of heart failure, or the symptoms may be mild to severe. Symptoms can be constant or can come and go. Some common symptoms of heart failure include:

- Shortness of breath or a hard time breathing with activity, at rest, or when lying flat. Shortness of breath happens when fluid backs up into the lungs (congestion) or when a person's body does not have enough oxygen-rich blood to let a person go on with activity without resting. Even though breathing may seem like a lung problem, a heart condition can cause shortness of breath. In some cases, shortness of breath may cause a person to wake up suddenly at night.
- A dry, hacking cough or wheezing.
- Swollen ankles, legs, and/or abdomen, and weight gain. Less blood flow to the kidneys causes the body to hold on to fluid. This causes swelling (edema) and water weight gain.
- The need to urinate (pee) while resting at night. Gravity causes more blood to get to the heart and kidneys when lying down.

How is heart failure diagnosed?

Your doctor will ask questions about your symptoms and medical history. The doctor will want to know about:

- any health issues like diabetes, kidney disease, high blood pressure, heart rhythm disorders, high cholesterol, coronary artery disease, or other heart problems
- any family history of heart disease or sudden death
- current or past smoking or tobacco use
- alcohol use
- any history of chemotherapy and/or radiation treatments
- all medications, supplements, and herbs taken

Your doctor will do a physical exam to check for signs of heart failure and any other illnesses that may have caused the heart muscle to get weak or stiff.

What tests will the doctor do to get a diagnosis?

Certain tests can help your doctor find the cause, type, and stage of heart failure. Your doctor will tell you which tests are needed.

Blood tests – Different blood tests measure different things. A patient with heart failure commonly has blood tests to check kidney function, liver function, thyroid function, cholesterol levels, iron levels, and screen for anemia.

B-type natriuretic peptide (BNP or NT Pro BNP) blood test – BNP is a hormone released from heart muscle cells when heart failure develops and worsens. The blood level of BNP goes up when heart failure symptoms get worse and goes down when heart failure is stable. A person's BNP level helps the doctor know if shortness of breath is caused by heart failure. A high BNP level may mean heart failure is getting worse.

Cardiac catheterization (Angiogram) – The doctor will put a catheter (tube) into a blood vessel in the patient's arm or leg and guide it to the patient's heart while using a special X-ray machine. There are two types of cardiac catheterizations: left and right. In a left heart catheterization, contrast dye may be used to take X-ray videos of heart valves, coronary arteries, and heart chambers. A left heart catheterization checks pumping action of the heart. A right heart catheterization does not use contrast dye and is used to measure pressure in the right side of the heart and blood vessels that lead to the lungs.

Chest X-ray – A picture of a person's heart and lungs. An X-ray can show if the heart is enlarged and check for fluid around the heart and lungs.

Echocardiogram (echo) – An echocardiogram may be done to check for and monitor heart failure. An echo uses sound waves (ultrasound) to view the heart. This test can measure the ejection fraction (see below). It can also be used to measure the size of your heart and check how your heart valves are working. An echo also may be done to look for blood clots, abnormal growths, or holes between the heart chambers. Usually an echo is done using an ultrasound wand placed on the chest.

Ejection fraction (EF) – The ejection fraction, or EF, is the percentage blood pumped out of the heart when it contracts (squeezes). Most of the time, the ejection fraction refers to the blood being pumped out of the heart's left ventricle. This is called the left ventricular ejection fraction or LVEF.

Your EF can be measured in the doctor's office during an echocardiogram or by other tests such as a multigated acquisition (MUGA) scan, cardiac catheterization, nuclear stress test, or magnetic resonance imaging (MRI) scan of the heart. A normal EF ranges from 50% to 70%. It is important for the doctor to know your EF, which can go up or down based on your heart condition and how well medications and treatments are working. EF should be measured when you are diagnosed with heart failure to get a baseline. After that, it is measured when needed, based on your condition.

Electrocardiogram (ECG or EKG) – During this test, small, flat sticky patches called electrodes are put on the patient’s chest. Cables are attached to the electrodes. Information about the heart’s electrical activity goes to a monitor and is charted on graph paper.

Multigated acquisition (MUGA) scan – A nuclear scan to check the pumping function of the ventricles (lower heart chambers).

Stress test – An exercise stress test measures how a person’s heart responds to stress. The test usually involves walking on a treadmill or riding a stationary bike while the ECG, heart rate, and blood pressure are monitored. If the person is not able to use a treadmill or bike, medications may be given to stress the heart; this is called a pharmacological or medication stress test.

Genetic counseling – Researchers are learning more and detecting links between specific genetic changes (mutations) and the higher risk for developing certain types of cancer, heart disease or other conditions. These mutations and risks can be passed down (inherited) in families.

Genetic information may help a doctor make decisions about screening and monitoring people who have higher genetic risk. The information learned from screening and monitoring may allow a doctor to diagnose some conditions early, when they are most easily treated. Early diagnosis may give people options that might help to lower their risk of developing the disease.

The Genetic Counseling Program at Baylor Scott & White offers specially trained genetic counselors who can assess how likely a person is to develop certain types of cancer, heart disease, or other conditions. The counselor works with each patient to discuss possible actions if tests show a genetic mutation. Counseling and testing for the patient and appropriate family members is recommended if a genetic mutation is found.



What is the treatment for heart failure?

Depending on the cause of your heart failure, early treatments for mild to moderate heart failure will include:

- regular exercise
- quitting smoking
- treating high blood pressure with medication and diet
- treating lipid (cholesterol) disorders
- stopping alcohol or certain drugs

Your doctor will make sure you are prescribed medications proven to help. Medication doses will be adjusted to get the best benefit for each patient.

- an angiotensin converting enzyme (ACE) inhibitor OR an angiotensin II receptor blocker (ARB) OR an angiotensin-receptor/neprilysin inhibitor (ARNI)
- an aldosterone antagonist
- a beta blocker

Other medications may be used depending on the stage of heart failure and other factors. These include:

- a hydralazine/nitrate combination
- a diuretics (water pills) are used in most patients
- digoxin is used in some patients

Other treatments the doctor may prescribe:

- a heart healthy, low-sodium diet (less than 2000 mg per day)
- limit fluids if told by your doctor
- weigh every day and report as the doctor requests

How does a person know if heart failure advances?

If your heart failure is getting worse, you will notice feeling more short of breath, more fatigue, and less able to do activities and/or exercise.

What are the treatment options for heart failure?

In addition to medications, you and your doctor should talk about whether surgery or other procedures are right for you. Surgical procedures may be options for some patients with coronary artery blockage, heart attack, and heart valve problems.

If your heart muscle is not pumping in a coordinated way, your doctor may advise cardiac resynchronization therapy (a biventricular pacemaker). An implantable cardiac defibrillator (ICD) is another device that is recommended for some people with heart failure and a low ejection fraction.

Depending on the situation, your healthcare team may talk with you about other treatments that may help such as:

- continuous IV (intravenous) inotrope medications to help the heart pump better
- surgery options
- research studies and clinical trials
- ventricular assist devices
- heart transplant
- palliative and supportive care
- hospice care

What are the options for surgical management of heart failure?

LVAD

An LVAD can be a “bridge to transplant” for people whose medical therapy has not worked and who are hospitalized with end-stage systolic heart failure. The LVAD is inserted into the body through the femoral vein or artery in the groin or directly through the heart muscle.

An LVAD is an excellent option for patients with end-stage heart failure. For some people with severe heart failure who do not respond to usual treatment, an LVAD can be used as destination therapy, which is an alternative to heart transplant, providing longterm support in patients who are not candidates for transplant. At Baylor Scott & White, we implant all current FDA approved LVAD devices. In addition, some patients may be treated with a number of FDA approved short-term mechanical heart support devices, including ECMO.

Baylor University Medical Center at Dallas was the nation's first hospital to receive the Gold Seal of Approval™ from The Joint Commission for the VAD program, an accreditation that is renewed every two years. Baylor University Medical Center at Dallas, Baylor Scott & White Heart and Vascular Hospital – Dallas, and Baylor Scott & White The Heart Hospital – Plano all perform bridge-to-transplant surgeries.

The Baylor Scott & White Heart Center, part of the Heart and Vascular Institute, is located at the Baylor Scott & White Medical Center in Temple. The Center offers all aspects of heart and cardiovascular care in one location, and serves patients from throughout the state. The Center achieved the highest level in Chest Pain Center accreditation from the Society of Cardiovascular Patient Care.

We also participate in research studies and clinical trials to test new technology and treatments for heart failure.

Who is eligible to receive an LVAD?

Your doctor will decide if an LVAD is a good treatment based on your medical condition, symptoms, age, body size, and other medical conditions. An LVAD may not be the right treatment choice for some patients who have blood clotting disorders, permanent kidney failure, very bad liver disease, very bad lung disease, or infections that cannot be treated with antibiotics.

How is it decided if a patient is a good candidate for an LVAD?

Our heart failure team will decide if an LVAD is the best treatment for you. Your heart failure team will care for you in the hospital, after you get your LVAD, and also after you leave the hospital for follow-up outpatient appointments. Your team is made up of:

- Heart failure cardiologists
- Cardiac surgeons
- Advanced practice registered nurses and physician assistants
- Social workers
- Bioethicists

- Palliative medicine specialists
- Cardiac rehabilitation specialists
- Registered dietitian nutritionists
- Other team members as needed; for example, the patient may need to see a lung specialist or kidney doctor

Tests may include routine blood work, chest X-ray, electrocardiogram (ECG), echocardiogram, left and right heart catheterization, or others. These tests may be ordered by the heart failure cardiologist or by the surgeon. Some of these tests may have been done before and will only be repeated if they were not done within the last 6 to 12 months, depending on the type of test.

What are the risks of the LVAD implantation procedure?

Every surgery has risks. There are risks to the LVAD implantation procedure. Some of the possible risks include bleeding, blood clots, respiratory (lung) failure, kidney failure, stroke, infection, and device (LVAD) failure. There may be other possible risks. Steps are taken to decrease these risks.

You should feel free to ask your doctor questions to make sure you understand why the procedure is advised and the possible risks of the procedure.

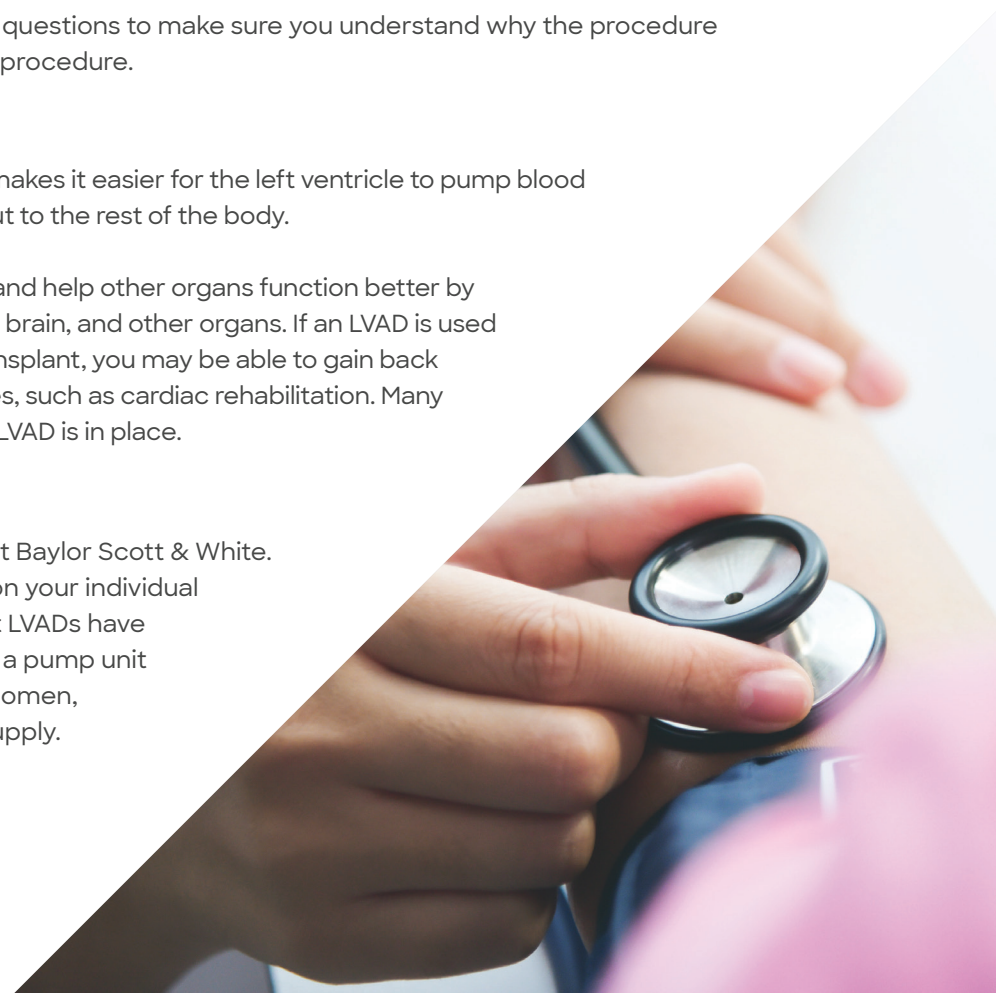
How does the LVAD work?

An LVAD does not replace the heart. It makes it easier for the left ventricle to pump blood to the aorta (the body's main artery) out to the rest of the body.

The LVAD may support blood pressure and help other organs function better by getting more blood to the kidneys, liver, brain, and other organs. If an LVAD is used as destination therapy or bridge-to-transplant, you may be able to gain back enough strength to take part in activities, such as cardiac rehabilitation. Many people can leave the hospital after the LVAD is in place.

What are the components of the LVAD?

Different types of LVADs are available at Baylor Scott & White. The type of LVAD you get will depend on your individual needs and medical condition. Different LVADs have different parts. In general, an LVAD has a pump unit that may be placed in the chest or abdomen, a controller, and an energy or power supply.



How does someone live with an LVAD?

To improve your quality of life, you must carefully follow instructions given by the health care team.

After an LVAD is put in, you and your caregivers will get detailed education to make sure you can use the LVAD safely. You will learn how to manage the LVAD and trouble-shoot possible emergency situations. You'll need to show you know how to take care of your LVAD and yourself before being discharged from the hospital.

You'll also need to show independence with self-care activities before being discharged.

You will get guidelines about activities, including showering and sexual activity. You will also learn about medications, diet, and when to call the doctor.

At home, you will need a weighing scale that measures correctly and a thermometer. You may need to learn to check your own blood pressure. Your healthcare team will tell you how to reach a member of the team. One of our healthcare team members will be available to answer patient questions 24 hours a day, 7 days a week.

Heart Transplant

Baylor Scott & White has treated some of the most complex heart transplant cases and helped patients who have been turned away by other medical centers. [Baylor University Medical Center](#), part of Baylor Scott & White and [Baylor Scott & White Medical Center - Temple](#) are the only two Baylor Scott & White locations in the state of Texas that offer heart transplants.

The Baylor Scott & White Annette C. and Harold C. Simmons Transplant Institute at Baylor University Medical Center at Dallas is home to a highly experienced team of physicians on the medical staff and other clinicians who provide comprehensive transplant services. The heart transplant program at Baylor Dallas has the highest volume of patients in Texas.

As the only heart transplant center between Austin and Dallas, Baylor Scott & White Medical Center - Temple offers expertise and compassion in serving the unique needs of transplant surgery patients.

Our transplant services combine advanced clinical research and innovative approaches to provide quality results and outstanding service to patients and their families.

Before being put on the heart transplant list, a patient goes through an in-depth screening process. A team of heart doctors, nurses, social workers and others looks at the patient's medical history, test results, social history and psychosocial information results to see if the patient may be able to survive a heart transplant. The team also looks at whether the patient will be able to keep up with the long-term self-care needed to live a healthy life. Once a patient is on the heart transplant list, the wait begins for a donor to become available. The wait time can be long and stressful. For some patients, a left ventricular assist device (LVAD) may be used as a "bridge to transplantation." See page 7 for more information about LVADs.

Heart transplant surgery involves taking out the failing heart or heart and lungs and putting in a healthy donor heart or heart and lungs. The donor heart is completely removed from someone who has died, and brought to the recipient, the person getting the transplant. The recipient's heart is removed, leaving the back walls of the atria, which are the heart's upper chambers. The donor heart is sewn into the recipient's chest, the blood vessels are reconnected and blood flows through the new heart into the body.

Why choose Baylor Scott & White?

Our dedicated heart hospitals have been nationally recognized for quality care and we perform some of the nation's leading research in cardiac studies which have led to innovative treatments and improved patient outcomes.

You have many choices available for support throughout our network of facilities ranging from workshops, support groups, and classes, to specialty clinics and outpatient rehabilitation.

Make an appointment

For more information or to make an appointment at one of our facilities, please contact us at 1-844-279-3627 if you are located in Central Texas, and 1-844-487-6362 if you are located in North Texas.



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