East Jefferson General Hospital
LCMC Health

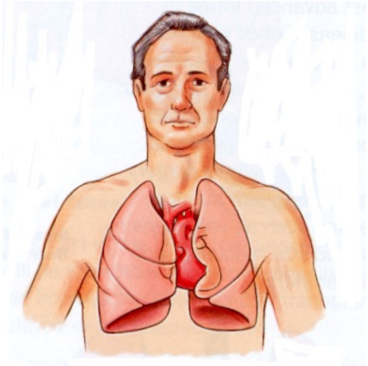
Tulane MEDICINE

Heart transplant educational material

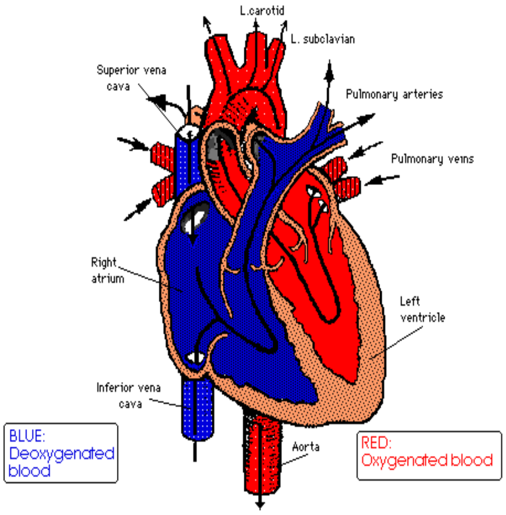
Advanced heart failure and heart transplantation

So your doctor says you need treatment for advanced heart failure… now what?

To begin let’s review what the heart does:



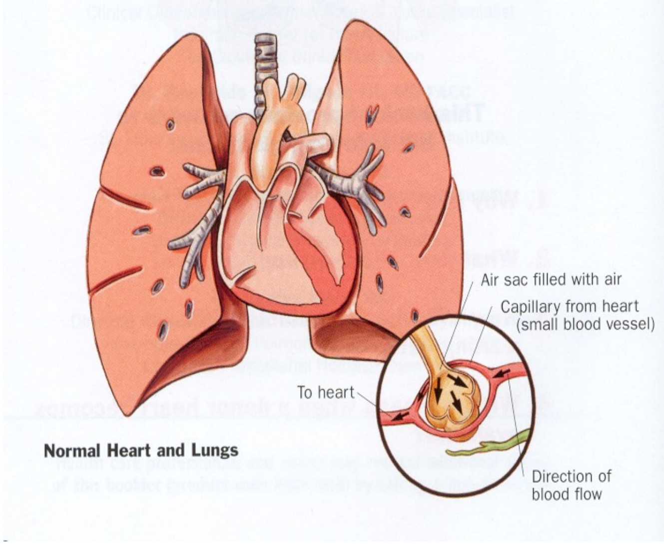
The heart is located in the middle of the chest and lies beneath the breastbone (sternum) and slightly to the left. It is a powerful muscular organ that is approximately the size of a man’s fist.



The heart is divided vertically by a muscular wall called the septum. The right side of the septum, often called the right heart, is made up of the right atrium and the right ventricle. The left side of the heart consists of the left atrium and the left ventricle. The flow of blood in and out of the chambers of the heart is controlled by four one-way valves.

The right side of the heart receives blood that is returning from the tissues in the body—that is, it receives blood that has had much of the oxygen removed by the tissue through which it has passed. Blood returns to the heart by way of the superior and inferior vena cava (the largest veins of the body).

This returning blood contains wastes from the cells in the form of carbon dioxide. The blood passes from the right atrium to the right ventricle, and then is carried to the lung by the pulmonary arteries.



Normal Heart and Lungs

Once in the lungs, the carbon dioxide is removed from the blood, and oxygen that is in the lungs is picked up by the red blood cells.

When you exhale, the carbon dioxide is expelled from your lungs and leaves your body.

Blood containing oxygen is then returned from the lungs through the pulmonary veins to the left side of the heart, first into the left atrium and then to the left ventricle.

The left ventricle pumps this oxygen rich blood through the aorta (the largest artery of the body) and out to the cells in the body. In order to do this, the left ventricle must be more powerful than the other chambers of the heart. Therefore, it is a larger and thicker muscle than the right ventricle. The heart does this about 60 to 70 times per minute for 24 hours a day, each and every day of your life. The beats of the heart are rhythmic expansions of your arteries as the blood rushes through them. This is known as your pulse and can be felt near the skin surface at different locations on your body.

Your heart is like all of the other cells in the body: it needs a supply of oxygen-rich blood to meet its own energy needs. The coronary arteries supplying oxygen-rich blood to the heart must be wide enough to permit enough blood to reach all the cells of the heart. When they become too narrow, as occurs in coronary artery disease, the supply of oxygen to the heart is reduced. This may result in chest pain called angina pectoris. A heart attack can occur when the heart muscle is deprived of oxygen.

Causes of heart failure:

Coronary artery disease is caused by narrowing or hardening of the coronary arteries due to fatty deposits called plaques that accumulate on the inner surface. This will decrease blood flow and lead to a severe lack of oxygen to the cells of the heart. Chest pain and heart attack (myocardial infarction) often occur when one or more of the coronary arteries is narrowed or blocked by plaque. Improper diet, smoking, diabetes, high cholesterol, high blood pressure or certain medications may cause plaque to form.

Heart attack occurs when a coronary artery is completely blocked, stopping blood flow to part of the heart muscle. Without oxygen-rich blood, this area of the heart is permanently damaged. The damaged portion of the heart muscle loses its ability to pump and the rest of the heart muscle has to work harder. The strained heart muscle eventually tires out and may pump less blood to the rest of the body.

High blood pressure can put extra strain on the heart. Blood pressure is the force pushing blood through the vessels. When your blood pressure is high, your heart has to work harder. After a while, the heart's muscle walls thicken and some of the chambers may enlarge. The heart muscle eventually stretches too much and weakens.

Cardiomyopathy is a weakening of the heart muscle. We do not always know what caused this weakening. Sometimes there is inflammation of the heart muscle due to bacterial or viral infection. It can be caused by factors of hereditary. People with cardiomyopathy have poor pump function. The heart becomes enlarged, and the walls of the heart thicken. Fluid may build up in the lungs (congestive heart failure). This will cause shortness of breath even when the patient is just walking normally.

Other disorders can weaken your heart.

- Valve disease caused by birth defects, infection, or rheumatic fever
- Hereditary heart defects
- Diabetes increases your risk of heart disease
- Chronic kidney problems can cause the heart to do more work
- Rapid or irregular heartbeats can weaken the heart over time

Why you need advanced heart therapy: VAD and/or heart transplant

There are many reasons why you may need advanced heart therapy, but they all boil down to one common feature: The heart can't perform its pumping function.

Because of damage to your heart you may experience shortness of breath and fatigue with any exertion. Swelling of the feet, legs, and abdomen often occurs.

Life expectancy is unpredictable but on the average it is quite limited in patients with such advanced heart disease.

Your doctor may have suggested a heart transplant because your heart problem seriously limits your physical activity and quality of life. Our goal is to help you feel better. Our Transplant Cardiologist will discuss the best options for you.

We will start by ensuring you are on the best medications for your condition, with the hope of significant improvement in your status.

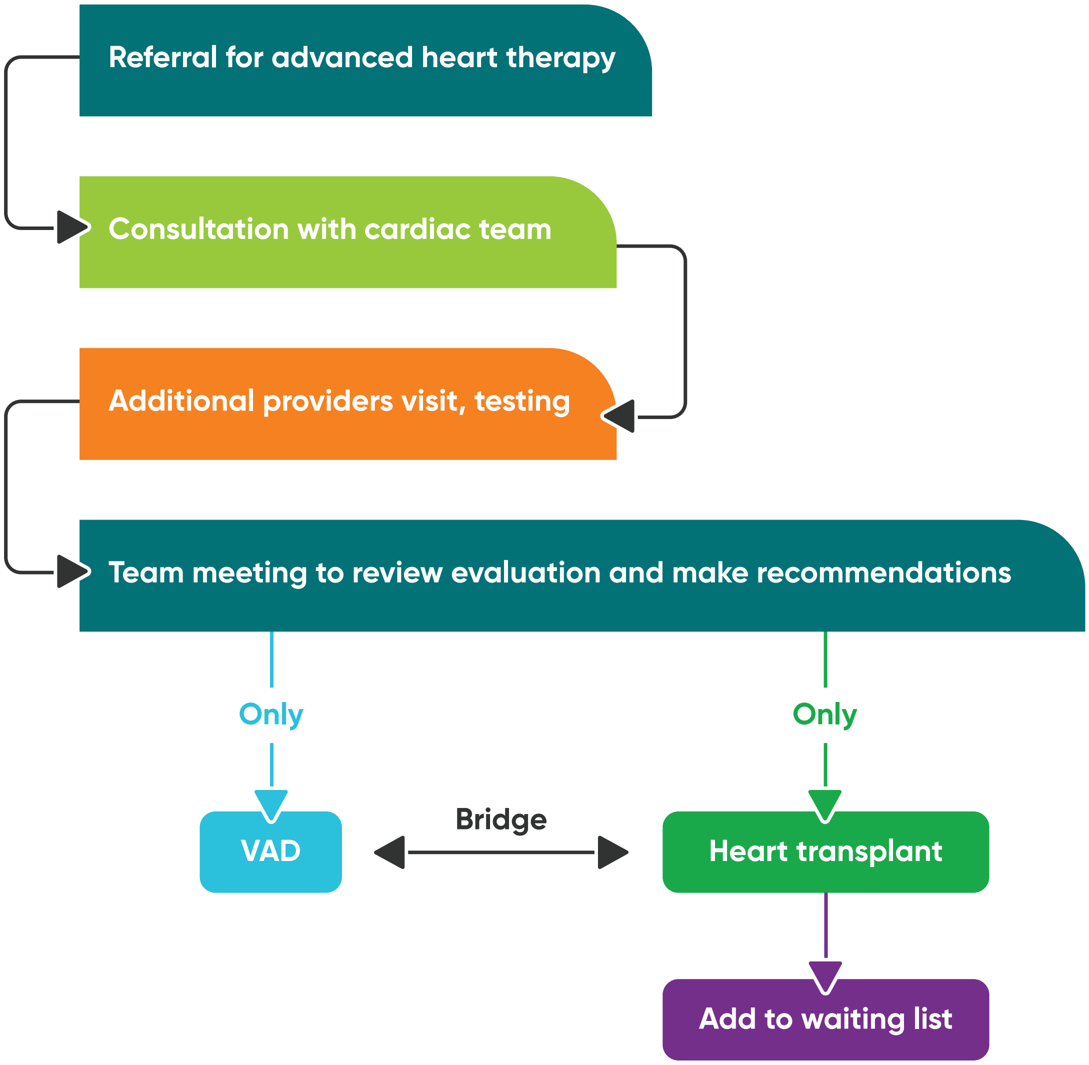
The additional treatments include VAD and Heart Transplant.

Heart transplantation is reserved only for patients with the most advanced forms of heart disease, when no other options are available such as medications, coronary bypass surgery, angioplasty or pacemaker therapy. We want to try all avenues before we consider heart transplant. If it turns out that the best treatment for your heart condition is transplant, it is good to know we here at Tulane Transplant Institute have the experience and the ability to perform such procedures.

Consideration for heart transplantation becomes necessary for patients who are failing maximal medical therapy and in whom surgery or placement of a VAD device is unlikely to be beneficial. Such patients usually have severe damage to the heart muscle as a result of coronary artery disease (such as a heart attack or unstable angina) or idiopathic cardiomyopathy (a condition in which damage is due to an unknown cause). Other chronic conditions such as hypertension (high blood pressure) or diabetes can damage the heart. The ejection fraction, which is a measure of the heart's strength in pumping is less than 20% (normal is 50% to 65%).

Advanced heart failure treatment options map

Treatment options for advanced heart failure are designed to manage symptoms, improve quality of life, and slow disease progression. The approach to treatment is highly individualized, taking into account the severity of heart failure, underlying causes, the patient’s overall health, and their preferences. A combination of medical therapies, device interventions, and in some cases, advanced procedures such as heart transplantation or mechanical circulatory support, are considered to address the multifaceted nature of this condition. The goal is to optimize heart function, prevent hospitalizations, and provide a holistic approach to care that aligns with the patient’s needs and treatment goals.



Referral for advanced heart therapy

Consultation with cardiac team

Additional providers visit, testing

Team meeting to review evaluation and make recommendations

Eligibility and evaluation for a heart transplant

Who can get a heart transplant?

A **heart transplant** is only for people with **severe heart failure** when no other treatments work. Doctors look at different factors to decide if someone qualifies.

Medical requirements

To be eligible, you must:
- Have **severe heart failure**, with a heart pumping strength (ejection fraction) of **less than 20%** (normal is 50-65%).
- Have **tried all other treatments** (like medications, surgery, or pacemakers) without success.
- Have **no other options** left for treatment.

Who Might Not Qualify?

A person may not be able to get a heart transplant if they have:
- **Severe, uncontrolled diabetes** that has caused serious health problems.
- **Kidney or liver disease**, which can increase risks during surgery.
- **A history of cancer**, since it could return after a transplant.
- **Chronic infections** like **HIV/AIDS or hepatitis.**
- **Weak overall health**, meaning the body might not handle surgery well.
- **Advanced age**, especially over **70 years old.**
- **Trouble following medical instructions**, since transplant patients must take medications and make lifestyle changes for life.

The heart transplant evaluation process

Doctors run many tests to see if a transplant is the right choice. Here's what to expect:

1. First Appointment

A **transplant doctor or nurse** will meet with you to:
- **Talk about your medical history** and heart condition.
- **Review past treatments** to see what has already been tried.

Eligibility and evaluation

2. Medical Tests

Doctors will check your heart and overall health with these tests:

- **Heart tests:**
  - **Echocardiogram** – Checks how well your heart pumps blood.
  - **Cardiac catheterization** – Looks for blockages in heart arteries and measure pressures in the heart.
  - **Electrocardiogram (EKG)** – Measures heart rhythm and electrical signals.
- **Blood Tests:**
  - Checks kidney and liver function.
  - Looks for infections and diabetes.
  - Tests for compatibility with potential donor hearts.
- **Lung tests:**
  - Make sure your lungs are strong enough for surgery.
- **Cancer screening:**
  - **Mammograms, PAP smear, colonoscopies, and skin exams** to rule out any hidden cancers.
- **Dental checkup:**
  - A dentist checks for infections, which could cause problems after surgery.
- **Mental health and social support review:**
  - Social worker will check if you have **support from family or friends.**
  - They also discuss the stress of a transplant.

3. Insurance and financial review

Heart transplants are expensive. The **hospital will check your insurance** to make sure it covers:

- Medical tests.
- Surgery and hospital stay.
- Medications you'll need for the rest of your life.

4. Transplant team decision

A **team of doctors, surgeons, and social workers** will review all your test results and consultations. If you qualify, you will be **added to the transplant waiting list.**

Staying healthy while waiting

To **stay eligible** for a transplant, you must:

- **Eat healthy** – Follow a **low-salt, low-cholesterol diet.**
- **Maintain a healthy weight** – Lose weight if needed.
- **Restrict fluid intake**
- **Quit smoking** – Smoking can **disqualify** you from getting a transplant.
- **Take your medications** exactly as prescribed.
- **Exercise** with your doctor's approval.

Waiting for a heart transplant

Waiting for a new heart can be one of the hardest parts of the transplant process. It might take just a few days, or it could take months or even years.

The wait depends on when a suitable heart becomes available. The donated heart must match your blood type and body size. How far the donor is from you also matters, since a heart transplant must happen quickly. Donor hearts are first offered to transplant centers nearby and then to centers farther away if needed.

Who decides who gets a heart?

In the United States, an organization called **UNOS** (United Network for Organ Sharing) manages the organ donation system. They make sure donated organs go to people who need them the most. When you are put on the transplant list, you are given a status based on how sick you are:

- **Status 1, 2** – People in the hospital who are very sick and need a heart right away.
- **Status 3, 4, 5, 6** – These numbers represent different levels of illness.
- **Status 7** – People who temporarily cannot get a heart transplant right now, possibly due to other medical issues, insurance problems, or personal choice.

Your status may change as your health changes. If you have questions about your status, talk to your transplant team.

How to cope while waiting

Waiting for a heart transplant can be stressful. Here are some things that might help:

- **Talk about your feelings** with family and friends.
- **Keep your transplant team updated** about your health.
- **Stay reachable** by phone or pager.
- **Visit your doctor regularly** for check-ups.
- **Eat well and watch your weight.**
- **Get support** from your transplant coordinator, social worker, or others.

If you are at home while waiting, be prepared for the call that a heart is available. Also, let them know if you go on vacation and may be harder to reach.

It's a good idea to pack a hospital bag with comfortable clothes, books, music, photos, and anything else that will help you feel at ease.

If you must stay in a hospital while waiting, tell your transplant coordinator how you are doing.

Keeping your health in check

You will have more check-ups and tests while waiting for a heart transplant. It's important to keep your transplant team updated, especially if:

- You start taking new medications.
- You get a blood transfusion.
- Your insurance changes.
- Your health condition changes.

If your heart condition gets worse, you might need to stay in the hospital so doctors can keep an eye on you. This can be tough because you may be away from home and loved ones, but your healthcare team will help you adjust.

Choosing a caregiver

Before your transplant, you need to decide who will take care of you during recovery. This person should be responsible and able to:

- Take you to doctor's appointments.
- Pick up your medications.
- Help with your daily activities.

Your caregiver can be a family member or a friend. Some people have more than one caregiver. Caregivers also need to go to a special class to learn how to care for you after surgery.

Having a strong support system is an important part of a successful transplant.

When a heart become available, and you get the call

The Tulane transplant team evaluates and accepts a donor heart based on the condition and needs of the person waiting for a transplant. As you went through an extensive evaluation, so has the donor.

When a donor heart becomes available to you, a member of the transplant team will call you. This call could come at any time day or night.

If a donated heart comes from an "increased risk" donor, your transplant team will call you to talk about that before a decision is made to use that donor heart. You have the right to refuse a heart at any time. While you wait, make healthy choices. Eat a balanced diet and stay active. If you are overweight, losing weight can help your recovery after surgery and raise your chances for a successful long-term outcome. Thinking ahead and creating a plan for this important event in your life will make it easier for you to cope with the immediate stress of the operation, and will benefit your recuperation afterwards.

At the hospital

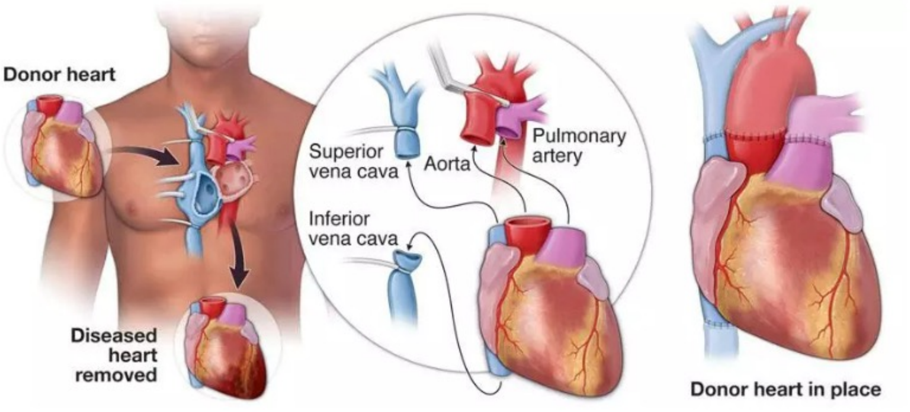
After you are admitted to the hospital, your transplant team does a final evaluation to make sure you can have the transplant. If you can have surgery, preparation for the transplant begins. If the evaluation shows the donor heart is not suitable for you or if you are not ready to have surgery, you may not be able to have the transplant. If that happens, talk with your transplant team about what comes next. Remember the donation of an organ is considered an anonymous gift. You will not be given information about your donor, just as the donor's family will not be given information about you.

What usually happens during surgery?

Heart transplant surgery usually lasts about six hours. It may take longer, depending on your situation. You get medicine to put you to sleep for transplant surgery. During surgery, the surgeon opens your chest and connects you to a heart-lung machine that keeps oxygen rich blood flowing through your body. The diseased heart is removed, and the donor heart is sewn into place.

When a heart become available

How a heart is transplanted



After Surgery

Immediately after surgery, you are taken to the cardiac intensive care unit where your transplant team monitors you at all times. When your condition improves, you move to the step-down unit. The timing of that move depends on your recovery and your response to medications.

Several monitors and tubes are put in during surgery. The monitors record your oxygen level, blood pressure and the pressures in the chambers of your heart. These monitors are temporary. Tubes in your chest remove extra fluid from the area around where the surgery was done.

A tube placed through your mouth or nose and into your stomach keeps your stomach empty and prevents nausea and vomiting. Usually, it is taken out soon after surgery.

Right after surgery, you get fluids and medications through several intravenous, (IV), catheters.

Another tube, called a urinary catheter, is in your bladder to continuously empty it.

All of these necessary tubes and wires will make it difficult to move. They are removed as quickly as possible as you recover to reduce the chance of infection.

Possible complications

Some of the problems that may come with transplant surgery are the same as any surgery: infection, bleeding and blood clots. Rare complications include heart attack, stroke and death. After heart transplant, other problems may include rejection, infection and coronary artery disease. These are lifelong concerns that need to be checked on a regular basis.

Breathing

During surgery, an anesthesiologist puts a breathing tube, called an endotracheal tube, through your nose or mouth. The tube connects to a ventilator that pumps air into and out of your lungs. Together the tube and ventilator help you breathe, keep your airways open, and make it easier to clear fluid from your lungs. The tube is not painful, it is uncomfortable. While it is in place, you cannot speak. The breathing tube is taken out when you can breathe and cough on your own. After the breathing tube is taken out, you may receive extra oxygen to help your body heal and to prevent breathing problems.

To speed your recovery after surgery, members of your health care team help you breathe deeply and cough. Coughing helps keep your lungs clear. It can prevent pneumonia. Coughing does not interfere with the healing of your incision. Support your incision with a pillow when you cough. If you have questions, ask a member of your care team.

Pain management

Managing pain is important because it helps you recover faster. Members of the transplant team work with you to manage your pain. Medications and other treatments are available to make you more comfortable. Tell a member of your health care team any time your pain gets worse or if it is not well controlled.

Getting mobile

As you progress, you will be able and encouraged to get up and move soon after transplant. In many cases, the more quickly you can get up and start moving after surgery, the less likely you are to have medical and surgical complications. Physical therapy can help prevent complications and speed your recovery. As you move around the hospital you will be instructed to wear a mask, this is to help prevent infection. As you get stronger after your transplant, you begin an exercise program.

Physical therapists and occupational therapists help you with this program. They may recommend exercises such as walking and biking that allow you to become more active after surgery. After you leave the hospital, you continue this program. Please talk to your physical therapist and occupational therapist about exercise you can do on your own when you return home, and when you can start a cardiac rehab program.

Nutrition

A healthy diet supports healing and recovery. After the transplant, a transplant dietitian works with you to find ways you can eat well. The dietitian and heart transplant coordinator will talk with you about diet restrictions you should follow.

Emotional concerns

It is common for people who have had a transplant to feel mixed emotions. You may not sleep well in the hospital. You may be irritated because you cannot do what you want to right away. Your medications may make you feel anxious or sick. Some of your medications can cause mood swings. You may be in pain. All this can combine to make you worried, frustrated or angry. You might feel guilty if you are not happy or excited after a transplant. These are reasonable responses to a big health change. It can take time to adjust. It is important for you to talk about these issues. The transplant team can help if you have emotional concerns.

Planning your discharge from the hospital

You will be discharged from the hospital as soon as the transplant team feels you are ready to return home. This decision is based on your rate of healing after surgery, the status of your biopsy reports, and your ability to take and tolerate your medications. People who have a heart transplant usually stay in the hospital for about two weeks. However, your hospital stay could be shorter or longer. The time depends on your situation. In addition, before leaving the hospital, you and your caregiver must

- Understand your medications and their side effects.
- Know how to care for your incision and any drains or IV lines you have.
- Know the symptoms of rejection and infection.
- Know when to call your transplant team.

After you leave the hospital, you have frequent visits to Tulane Transplant Institute at East Jefferson General Hospital for continued care. You and your caregiver need to stay close to Tulane for several months. Your transplant team decides exactly how long you stay based on your condition.

Date	Weight	Blood pressure	Heart rate	Symptoms

Date	Weight	Blood pressure	Heart rate	Symptoms

Notes:

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