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CARDIOLOGY PATIENT PAGE

Heart Transplant

What to Expect

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This article summarizes what patients should expect and need to know about a heart transplant.

Why Do I Need a Heart Transplant?

Heart failure occurs when the heart is unable to pump enough blood to meet the needs of the body. The most common cause of damage to the heart muscle that results in heart failure is coronary artery disease. Other possible causes are listed below. The typical symptoms of heart failure are shortness of breath, poor exercise tolerance, cough (especially at night), fatigue, and fluid retention. If your heart failure symptoms and heart function cannot be improved by medications or surgery, you may benefit from a heart transplant. It should be pointed out, however, that heart transplantation is a treatment and not a cure. The 1-year survival rate is over 80%, with an average length of survival of 9.1 years. If you need a heart transplant, your cardiologist will refer you to a transplant physician for further evaluation.

Causes of Heart Failure

- Coronary artery disease (such as heart attack)
- Unknown (idiopathic)
- Hypertension
- Heart valve problems
- Infections (such as viruses)
- Alcohol and illicit drug use (such as cocaine)
- Inherited
- Congenital heart disease

The Pretransplant Work-Up

A transplant team is responsible for assessing whether you are a suitable heart transplant candidate.

Members of the Transplant Team

- Cardiologist
- Cardiovascular surgeon
- Transplant coordinator
- Social worker
- Dietitian
- Psychiatrist

Specific preoperative tests assess whether any other treatment options exist for you, to determine if you are sick enough to require a transplant, and to ensure that you are physically capable of having a transplant. These tests may include a coronary angiogram (a dye test of the heart arteries), an echocardiogram (ultrasound of your heart), and a cardiopulmonary study (a stress test using a bicycle or treadmill and a metabolic cart to measure oxygen use). Different blood, urine, and x-ray tests are done to look for other medical problems that may make a transplant impossible; your kidney and liver functions are measured, the presence of infection (such as hepatitis) is determined, and bone density is assessed.

Pretransplant Investigations

- Blood work, including HIV and hepatitis tests
- Chest x-ray
- ECG
- Coronary angiogram
- Echocardiogram
- Cardiopulmonary test
- Ultrasound of abdomen and blood vessels

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Continued

- Breathing test/pulmonary function tests
- Stool sample to detect blood
- Measurements of pressures in heart chambers (cardiac catheterization)

In severe heart failure, the pressures in the lungs (pulmonary artery pressure) may increase. To measure these pressures, a right heart catheterization and hemodynamic study are done. This involves inserting a small tube holder into a large vein in either the neck or groin. A measuring device (Swan-Ganz catheter) is inserted through the tube into the right heart and lungs, and the pulmonary artery pressures are taken. If the pressures are high, different intravenous medications are used to try to lower them. This may be done in the catheterization laboratory or may require a hospital admission. If the pulmonary artery pressures remain too high, there is a risk that the transplanted heart will not function properly and a transplant may not be possible.

Waiting for Your Heart Transplant

Once it is determined that you need a transplant and are a candidate, you will be placed on a waiting list. The waiting time can vary from days to several months depending on organ availability, your blood group, and how ill you are. Some patients may have serious medical events (such as stroke, severe infections, kidney failure, etc) while waiting for a heart transplant. If these are temporary, the patient may be temporarily removed from the active list of patients awaiting a transplant. Rarely, if it is a very severe and permanent problem, the patients may no longer be considered as candidates for transplant.

Once on the waiting list, you will receive a pager so that you can be contacted when a heart becomes available. It is important to answer the pager immediately and go to the hospital as soon as possible. We recommend that you arrange for transportation to the hospital; it is generally not advisable for you to drive yourself. The wait can be very stressful, but remember that many support services are available for you, including counselors, psychiatrists, family, and friends. Each transplant center has information packages (transplant manual) and teaching seminars about the transplant process and what to expect.

Unfortunately, there are not enough hearts for every patient in need, and some people may die while waiting for a transplant. Public campaigns urging people to sign an organ donor card and let loved ones know their wishes are very important in improving the shortage of organ donors. Donor hearts come from individuals who have been declared brain dead, usually from severe head injuries resulting from car accidents, gunshot wounds, or bleeding in the brain. The donor must be a similar weight and height as you. The ethnic background and sex of the donor do not matter. Donor organs are given according to the severity of illness or status level of the patient, size and blood group compatibility, and the length of time spent on the waiting list. When a heart that is a match

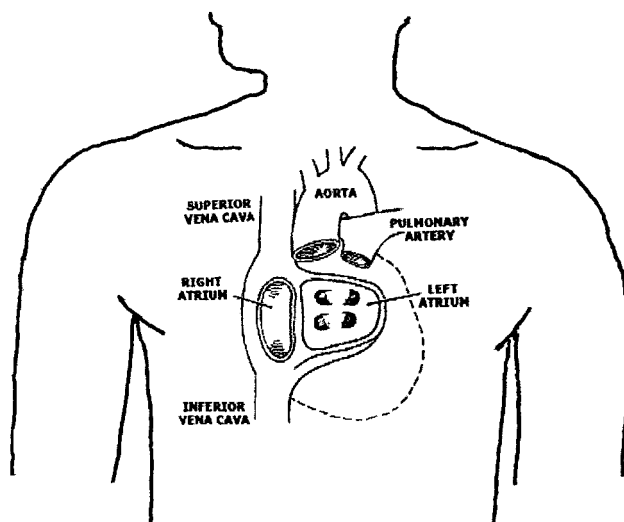


Figure 1. Recipient heart.

for you becomes available, you will be contacted by phone or pager. It is important that you keep your pager on at all times and check the batteries weekly. If you are leaving town, notify your transplant program, and leave a telephone number where you can be reached.

When You Get Called

When the transplant program notifies you that a heart is available, you are expected to arrive at the hospital within 2 hours of receiving the call. When you arrive, a team of doctors and nurses will prepare you for surgery. This includes a number of tests and procedures, such as measurement of your pulmonary artery pressures. Occasionally, there may be a false alarm, which occurs when the donor heart is not felt to be functioning well enough after examination by the surgeon. This may be very stressful, and the transplant team is available to counsel you. Remember that you want a healthy new heart, not just any heart.

Preparation for Surgery

- Blood work
- ECG
- Chest x-ray
- Urine sample
- Intravenous line for measuring pressures in lung arteries

The Heart Transplant

Once the heart has been deemed suitable, you will be taken to the operating room, where surgery will take about 4 hours. During the operation, a bypass machine will be used to give the blood oxygen for use in the rest of your body while the surgeon works on your heart. Most of the old heart is removed and the new one is attached to the incoming and outgoing blood vessels (Figures 1 and 2). After the surgery, you will be in the cardiovascular intensive care unit. Initially,

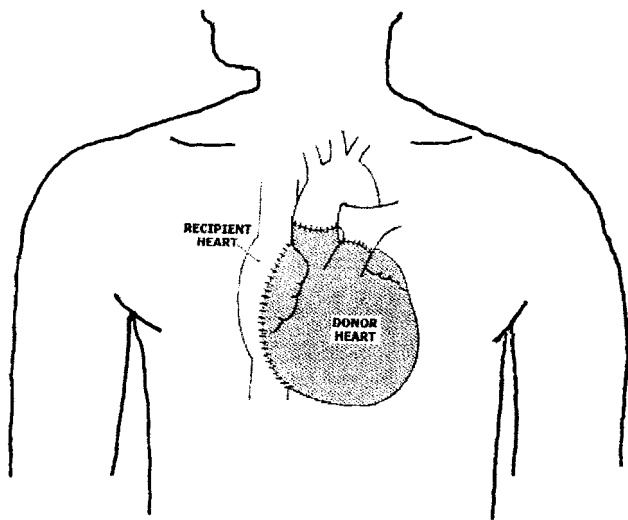


Figure 2. Donor heart.

a ventilator will help you breathe, and you will have tubes in your chest to drain fluid around your lungs and heart. Once you wake up and are able to breathe adequately, the ventilator and tubes will be removed. You will have some pain after the surgery and will receive pain medications either intravenously or by mouth. As you recover, you will be transferred to a step-down unit and then to a regular room.

While in hospital, frequent blood tests, including those measuring drug levels, electrolytes, and kidney function are performed. The transplant team will be watching for possible posttransplant complications, including infection and rejection of the heart. You will have several heart biopsies after the transplant to monitor for rejection. Heart biopsies involve inserting a tube holder into the vein in the neck or groin. Through this tube, a bioprobe (biopsy device) is inserted into the heart and small samples are taken. A pathologist reviews these to see if rejection is present. The frequency of biopsies depends on the time elapsed from transplant, your rejection history, and the protocols followed at each transplant center.

While in hospital, you will receive counseling from a dietitian, a physiotherapist, and a pharmacist to prepare you for your return home. It is important to have someone with you to help remember all of the information. You will be given contact numbers to call if you are having problems.

Medications

Many medications are required after the transplant, each with a specific purpose. There are medications to lower rejection

(immunosuppressants), medications to treat cholesterol (statins), medications to prevent infection, and sometimes medications to treat high blood pressure and other complications that may occur after transplant. These medications are often adjusted depending on side effects and the presence or absence of rejection. All medications have potential side effects, some more serious than others, although most people tolerate the medications well. Minor side effects may include rash and stomach upset. Serious side effects may include an increased risk of infections, diabetes, osteoporosis (thinning of the bones), high blood pressure, kidney disease, and the development of cancer. Lymphoma and skin cancer can occur after the transplant and are related to anti-rejection medication and its effects on the immune system. Avoid direct sunlight and remember to cover up and wear sun block to lower the risk of skin cancer.

Taking herbal remedies or over-the-counter or prescription medications may interfere with your heart medications. Make sure you check with your transplant coordinator before taking any such drugs.

Going Home

After leaving hospital, take 1 day at a time and increase your activities slowly over the following 6 to 8 weeks. Cardiac rehabilitation is an excellent way to get your full strength back, and your cardiologist can recommend a program for you. You should watch for possible signs of infection, including fever, sore throat, shortness of breath, cough, change in sputum, cold sores, flu-like symptoms, or redness, swelling, or drainage from your incision. If any of these develop, you should contact your transplant center as soon as possible. Be careful handling animals and do not clean litter boxes or birdcages because of the risk of infection. Signs of rejection include shortness of breath, weight gain, fever, and fatigue. The only way to diagnose rejection is by heart biopsy. Again, contact your transplant center if these symptoms develop. Regular cardiological follow-up with your physician is mandatory.

Additional Resources

- Heart Failure Society of America. Learn more about heart failure. Available at: <http://www.abouthf.org>. Accessed July 24, 2002.
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