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# Understanding Surgery for a Left Ventricular Assist Device

A left ventricular assist device (LVAD) helps the heart pump blood throughout your body. You may need surgery to get an LVAD if you have severe heart failure. A VAD often supports the left ventricle. It's the main pumping chamber of your heart. Some VADs are designed to also work with the right ventricle, which pumps blood to the lungs, or both ventricles.

Some LVADs are used for days to weeks. Others are used for months to years. LVADs can be used as:

- Short-term help for your heart.
- Long-term help if you are waiting for recovery or a heart transplant.
- Permanent help if you aren't able to have a heart transplant.

## What happens before LVAD surgery

If you are not already in the hospital, you will be admitted. Your health care provider will tell you how to get ready for the VAD surgery. Bring a list of or bring all the bottles of the medicines you take so your care team will know how to manage your medicines before and after your LVAD surgery. You may need to stop taking some medicines, such as blood thinners. Tell your provider about all the medicines you are taking. That includes over-the-counter medicines, vitamins, and supplements. Also tell them if you are allergic to anything, especially medicines. You will be asked to quit smoking if you smoke, this includes smokeless tobacco, electronic cigarettes, or the use of other vaping devices. Inform your care team if you use large amounts of alcohol or any illegal drugs.

Your provider will talk to you about the type of LVAD you will get and its risks. You will learn about how the device works. You will also learn how to care for it and yourself. You may also meet a person who already has an LVAD. They can answer your questions and give you advice about living with an LVAD.

Before the surgery, you may need some tests to check on your health. For instance, blood tests can tell how well your liver and kidneys are working. You will also need an echocardiogram. This test uses ultrasound to make a detailed image of your heart. It can show how well or poorly your heart is pumping. If you are a woman of child-bearing age, you will have a pregnancy test. Tell your provider if you suspect or know that you are pregnant.

If you haven't been eating well, you may need to wait a few days or weeks for the surgery. During that time, you may need to take nutritional supplements or have a feeding tube.

## What happens during LVAD surgery

Surgery for an LVAD is done in a hospital by experts who have the correct training to do the procedure. If it's an emergency, a short-term LVAD may be implanted in a cardiac catheterization lab. The surgery can take 4 to 6 hours. In general, you can expect the following:

- You are given medicine so you fall asleep. You won't feel any pain.

- Your care team closely watches your blood pressure and other vital signs throughout the surgery.
- A breathing tube is put down your throat into your lungs. The tube is connected to a ventilator. This machine helps you breathe during the surgery.
- The surgeon makes a long cut down the center of your chest. They open your breast bone (sternum) to reach your heart.
- You are connected to a heart-lung machine. It keeps blood moving through your body during the surgery.
- The surgeon positions the pump for the LVAD into the heart muscle from the outside of the heart. This connects the pump to the filling chamber inside the heart. Stitches help hold it in place. In some cases, the surgeon may make a small pocket to put the pump in. This depends on the type of LVAD you will receive.
- The surgeon attaches the tubes to your heart. The driveline is also put in place and exits the inside of your body to connect to a power source for the LVAD to run. These parts are secured with stitches.
- You are disconnected from the heart-lung machine.
- The surgeon turns on the LVAD. They check that it's working right. Ultrasound images (echocardiogram) will be taken so the surgeon can see how your heart is working while you are still in the operating room.
- The surgeon closes your breast bone with small wires. They close up your chest with stitches. The incisions are covered with dressings that must be kept clean and dry.

## What to expect after LVAD surgery

After the surgery, you will stay in the intensive care unit (ICU) for some time. How long depends on how quickly you recover. During this time, your care team will closely watch your heart rate, blood pressure, and other vital signs. You will likely need a breathing tube for a bit. You will be given medicine for any discomfort.

When you are able to breathe on your own, you will be moved out of the ICU. But you will likely stay in the hospital for a few more weeks. The time it takes to recover will depend on your health before the surgery. It can be longer if you have other health problems. As you recover, you will learn how to take care of the LVAD. You will need to show that you know how to do so before you leave the hospital. You may need to stay at a rehab facility for a while.

Having an LVAD means a lot of follow-up care. Your health care provider will discuss all the details with you. You will have a care team that helps you with the transition. The team members will teach you how to live with an LVAD. In general, you will:

- See your care team for periodic checkups.
- Need regular testing to check your health and the condition of the LVAD.
- Take medicine to prevent blood clots.
- Make certain lifestyle changes, such as not doing activities that submerge the driveline in water.

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## Risks of LVAD surgery

An LVAD can help you feel better and be more active. But having an LVAD has risks. Discuss those risks with your health care provider. Below are some of the most common or serious complications:

- Infection
- Bleeding
- Blood clots
- Stroke
- Irregular heartbeat
- Device problems
- Poor wound healing
- Need for another surgery
- Death