
Understanding Left Ventricular Assist Devices

A left ventricular assist device (LVAD) helps the heart pump blood out to your body. This device connects to one or both of the ventricles of your heart. A surgeon puts the LVAD in place.

Your heart has 4 chambers. The 2 upper ones are called the right and left atria. The lower chambers are called ventricles. An LVAD supports the left ventricle so it can pump out enough blood to all parts of your body. Some VADs are designed to also work with the right ventricle (RVAD) or both ventricles (BiVAD).

Other names for an LVAD are:

- Mechanical circulatory support device
- Mechanical circulatory assist device

Why you may need an LVAD

You may need an LVAD if you have advanced heart failure that does not get better with medicine or other procedures. Heart failure means your heart can no longer pump the amount of blood your body needs to work correctly. Your heart is too weak. Heart failure may happen if you have heart disease. Other health problems, such as diabetes and high blood pressure, can also damage and weaken the heart. An LVAD can help you feel better and live longer.

An LVAD can help you if you:

- Have heart failure that doesn't get better with medicine or other treatments. For example, cardiac resynchronization therapy (CRT). CRT is a special pacemaker that paces both sides of your heart to improve the flow of blood to the lungs and the rest of the body.
- Have heart failure and are waiting for a heart transplant.
- Have heart failure but can't have a heart transplant.
- Are recovering from heart surgery or a heart event, such as a heart attack.

An LVAD can be used for a short period of time, such as a few days or weeks. Or it can be used for months to years. People who are recovering from a heart attack or some other heart problem may need it only until their heart regains strength. This is called bridge to recovery therapy.

If you are waiting for a heart transplant, you may need an LVAD until a donor heart becomes available. This use is called a bridge to transplantation. If you can't have a heart transplant, you may use the LVAD as long-term treatment for your heart failure. This is called destination therapy. You may not be able to have a heart transplant if you have kidney disease, liver disease, hepatitis, cancer, or other health problems.

How an LVAD works

There are many kinds of LVADs. But they all work in a similar way. Some LVADs are used only in a hospital. Others can allow you to go home and resume many daily activities. Newer ones are smaller and more durable.

An LVAD has several parts. It has a pump, tubes, a driveline, a control unit, and a power source. In older versions, the pump was located outside the body or in the belly (abdomen) below the heart. For newer LVADs, the pump is placed inside the heart muscle from the outside and connects to the filling chamber on the inside of your heart. Or the pump can be placed directly next to the heart. Tubes connect the pump to your heart, often to the aorta and to the left ventricle. These tubes direct blood from the pump through your heart out to the rest of your body.

A driveline, or cable, links the pump to the control unit outside your body. The driveline usually leaves the body several inches from the navel. The control unit is powered by batteries. Or you can plug it into a power outlet. The control unit can alert you to problems with the pump. You carry the control unit and batteries with you in a holster.

What to expect when you have an LVAD

An LVAD can help you feel better and be more active. It can also help you live longer. But living with an LVAD can be challenging. You will have to make some lifestyle changes. You will also need lots of follow-up care. Your care team will be there to help you manage this transition.

After you have the LVAD, you will see your care team for periodic checkups. You will need to take medicine to prevent blood clots. You will also need regular testing to check your health and the condition of the LVAD. You will have to do daily maintenance on the LVAD and its parts. These activities may include:

- Cleaning and checking the equipment.
- Recording LVAD data and your vital signs, such as blood pressure.
- Checking that the batteries are charged and that you always have a replacement battery ready.
- Changing the dressing around the driveline.

With an LVAD, it's also important to focus on living a healthy lifestyle. You need to limit salt and eat foods good for your heart. A nutritionist can help you stick to a healthy eating pattern.

After you recover from surgery, physical therapy or cardiac rehab can help you regain or build strength. Regular exercise can keep you active longer. But you'll need to not do certain activities. These include activities that would get your driveline wet or submerged in water, such as swimming. You also may not be able to drive for some time. Your sleep habits can also be affected, so talk with your health care provider if you are not sleeping well.