

# Ventricular Assist Devices (VADs)

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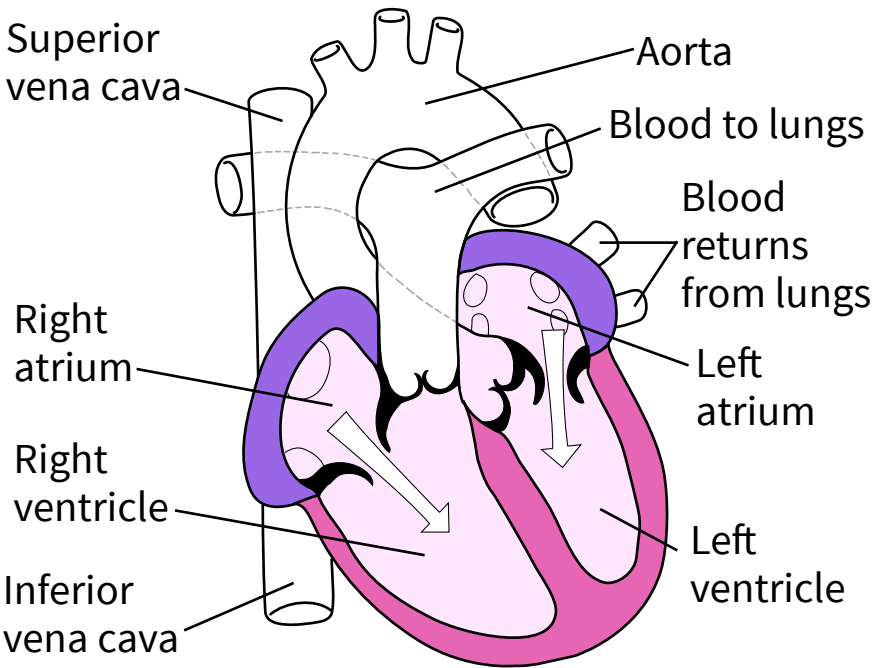


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# Ventricular Assist Devices (VADs)

## How does my heart work?

- Your heart is a muscle that pumps blood to your organs and around your body.
- The heart has a right side and a left side. Each side has 2 chambers (sections), called the atrium and the ventricle.



- Blood flows through the chambers and to the rest of the body through 4 valves. The valves open to let blood flow through, and then close to stop blood from flowing backwards.
- Blood flows through the heart in only 1 direction:
  - › It enters the right atrium from 2 large blood vessels (called the inferior vena cava and the superior vena cava).
  - › From there, it goes to the right ventricle.
  - › Then it flows to the lungs, where it picks up oxygen.
  - › It enters the heart again through the left atrium.
  - › From there, it goes to the left ventricle. This is the strongest part of the heart.
  - › It is then pushed to the rest of the body through a blood vessel (called the aorta).

## **How does disease affect my heart?**

- Some diseases cause your heart to not work as well. When your heart does not work well, oxygen in your blood does not reach all parts of your body. This can cause:
  - › Fluid buildup in your lungs, which can cause trouble breathing
  - › Fluid buildup in your hands and feet causing them to swell
  - › Tiredness and feeling like you do not have much energy

## **What can help my heart work better?**

- Healthy lifestyle changes, like:
  - › Exercising
  - › Losing weight
  - › Lowering your cholesterol
  - › Controlling blood pressure
  - › Stopping smoking (if you smoke)
  - › Controlling your diabetes (if you have it)
- Medication
- Surgery, like:
  - › Valve replacement (surgery to replace a valve in your heart with one that works better)
  - › Heart bypass

- › Heart transplant (surgery to replace your heart with one that works better)
- › Ventricular Assist Device (VAD) (surgery to implant [put in] a VAD)

## **When is a VAD used?**

- A VAD may be used to:
  - › pump blood when your heart cannot pump on its own.
  - › treat a weakened heart or end stage heart failure.
  - › help you live a more healthy life until you get a heart transplant.

### **Before you decide to have a VAD or a heart transplant:**

It is important to know that for the rest of your life, you will need to:

- › Take medication
- › Make lifestyle changes
- › Have check-ups at the hospital often

The VAD and transplant teams will help you decide which option is right for you.

## How does a VAD work?

- A tube in your left ventricle carries blood to the VAD pump. The pump moves the blood through another tube to the rest of your body.
- The pump has an external (outside of your body) power source that keeps the blood moving through your body.
- The external parts of a VAD are usually worn in a fanny pack or a backpack. They weigh about 5 pounds.
- Your VAD must be powered and working 24 hours a day, 7 days a week for the rest of your life, or until you get a heart transplant.
- During the day, the external parts of the VAD are powered by batteries. At night, the device must be plugged in to a wall outlet while you sleep.

**Your VAD must always be connected to a power source. You will die if your VAD is not connected to a power source.**

## Types of VADs

There are 3 types of VADs.

1. **Left ventricular assist device (LVAD):** Helps the left ventricle pump blood through your body.
2. **Right ventricular assist device (RVAD):** Helps the right ventricle pump blood through the body.
3. **Biventricular assist device (BiVAD):** Helps both ventricles pump blood through the body.

## What will happen during the surgery?

- You will have general anesthesia (medication to put you to sleep during surgery).
- The surgical team will use a heart-lung bypass machine. This machine does the work of your heart and lungs to give your body blood and oxygen during surgery.
- The surgeon will make an incision (cut) down the front of your chest and open your breast bone so they can reach your heart.
- They will put the VAD below your heart.

- They will use tubes to connect the VAD to your heart and to the power source. Your blood will then pump through the VAD to the rest of your body.
- The surgeon will then close your breast bone and incision.
- The surgery usually takes 6 to 8 hours, but it may take longer.

## What are the risks?

- Risks of having **general anesthesia** include:
  - › Blood clots
  - › Abnormal heartbeat
  - › Infection
  - › Pneumonia (lung infection)
  - › Bleeding
- Risks of having **VAD surgery** include:
  - › Neurological (nervous system) problems (like a stroke)
  - › Kidney failure
  - › Liver failure
  - › Right-sided heart failure
  - › Abnormal heartbeat
  - › VAD device failure
  - › Death
- We will talk about these risks with you and your support persons before your surgery.



## **What will happen after the surgery?**

- We will take you from the Operating Room (O.R.) to the Cardiovascular Intensive Care Unit (CVICU). This is where you will start to recover.
- You will have intravenous (I.V.) tubes for getting medications.
- You will have a catheter (thin, hollow tube) in your bladder so you can urinate (pee). Your nurses will measure how much you are urinating.
- There will be a tube in your mouth that goes down your throat. It will be connected to a respirator which will help you breathe. You will not be able to talk, drink, or eat.
- The tubes coming from your chest and stomach area (belly) will drain old blood out of your body.
- You will be connected to a heart monitor. This lets your nurses watch your heartbeat closely.
- The incision in your chest will be sore. Your nurse will give you pain medication.
- The tubes that hold the VAD's electrical wires will be coming out of your stomach area. These tubes connect the VAD to the external power source.
- The external parts of the VAD will be attached to your body (in a fanny pack or a backpack).

- As you recover, the respirator will be taken away. You may get oxygen through nasal (nose) prongs or a face mask for a few days, if needed.
- When you are well enough, the nurses and physiotherapists will work with you to get you out of bed and walking.
- When you no longer need 1-on-1 nursing care, you will be moved to the Cardiovascular Surgery Unit (7.1).
- Before you are discharged, we will teach you how to live with and care for your VAD.
- The amount of time spent in the CVICU and on Unit 7.1 is different for each person.

## **How long will I have the VAD?**

- If you do not have a heart transplant, you will have your VAD for the rest of your life. It is rare to recover from heart failure and be healthy enough to have a VAD removed.
- Over time, you will feel better and get used to having your VAD. Eating well and staying active can help with this.



This pamphlet is for educational purposes only. It is not intended to replace the advice or professional judgment of a health care provider. The information may not apply to all situations. If you have any questions, please ask your health care provider.

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Call 811 or visit: <https://811.novascotia.ca>

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