Intermountain® Healthcare

Cardioversion or TEE Cardioversion

What is cardioversion?

Cardioversion is a procedure that treats **arrhythmia**, an irregular or fast heartbeat. The goal is to restore your heart to a normal rhythm.

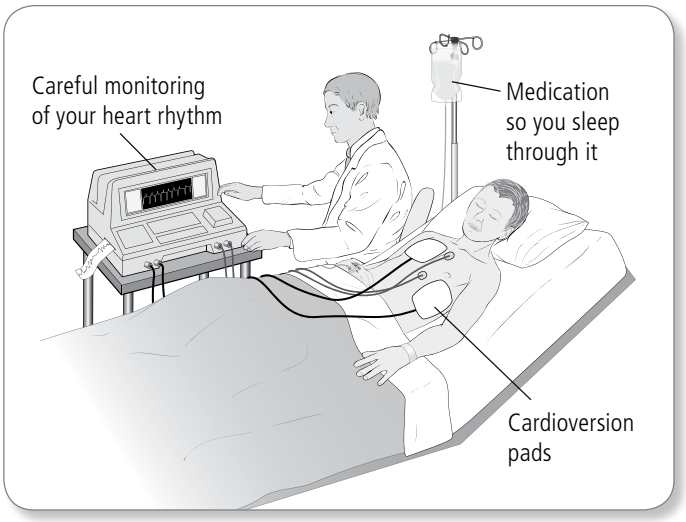
- **How a normal heartbeat works:** Your heart beats because an electrical pulse travels through your heart to make the muscle contract. In a normal heartbeat, the pulse travels smoothly through your heart in an even and regular beat.
- **What happens with arrhythmia:** With arrhythmia, the electrical pulse travels through the heart in a fast or disorganized way. The type of arrythmia treated with cardioversion usually starts in the heart's upper chambers (atria) and may cause your heart to beat too fast.
- **How cardioversion treats the problem:** In cardioversion, electrode pads send a split-second shock to your heart. This interrupts the abnormal heart rhythm, so the heart can start beating normally again. In many cases, a normal heartbeat returns.

Cardioversion is NOT the same as defibrillation, the emergency heart shock seen on TV or in movies. Cardioversion uses lower-level electric energy, timed at a precise moment in your heartbeat. Also, you have medication so you sleep through the procedure.

Why do I need it?

You might need cardioversion for these reasons:

- **To treat symptoms.** Arrhythmia can cause dizziness, fatigue (tiredness), chest discomfort, or shortness of breath.
- **To prevent blood clots.** Arrhythmia increases the chance that blood clots will form in your heart. If a clot leaves your heart, it can cause a stroke or other serious problem.



Cardioversion uses a low-energy electric shock to restore a normal heart rhythm.

What is a TEE cardioversion?

Arrhythmia can cause blood clots to form in your heart, so your doctor may want to do a special test right before your cardioversion to check for them. This additional test is called a **transesophageal echocardiogram**, or **TEE test.**

A TEE test uses **ultrasound**, sound waves that capture images of your heart. With a TEE test, a small ultrasound device is passed down your throat into your esophagus (food tube) so that it rests behind your heart. A TEE test allows doctors to get detailed pictures of your heart.

Why is a TEE test sometimes used with cardioversion? If a blood clot has formed in your heart, there's a chance that cardioversion could dislodge it. The clot could then travel to your lungs or brain and cause serious complications or a stroke. If the TEE test finds a clot in your heart, you won't have the cardioversion. You will take medication for several weeks and have the cardioversion later, when the blood clots have dissolved. If no clots are found, the team will do the cardioversion right away.

How do I prepare?

Before cardioversion, here's how you can prepare:

- **Take anticoagulant medication if your doctor prescribes it.** Depending on your risk for blood clots, for several weeks you might take **anticoagulant** medication (anti-clot medication, also called "blood thinners").
- **Tell your doctor about ALL medications you take.** This includes prescriptions, over-the-counter drugs, vitamins, and herbal remedies. Many of these can interfere with anticoagulants. Be sure to ask your doctor before taking any medications.
- **Tell your doctor if you've ever had an allergic reaction to anesthesia** (medication that makes you sleep and prevents pain).
- **Do not eat or drink anything for 8 hours before.** Usually, this means not eating or drinking after midnight the night before. If you need to take pills, take them with just a small sip of water.
- **Do not put lotions or creams on your chest or back the day of the procedure.** These can keep the electrode patches or pads from sticking to your skin.
- **Arrange for a ride home, and plan to take the day off.** You shouldn't drive for 24 hours after the procedure. You'll probably be at the hospital for several hours, including preparation and recovery time. Try to arrange for someone to be with you at home for the rest of the day.

What happens before?

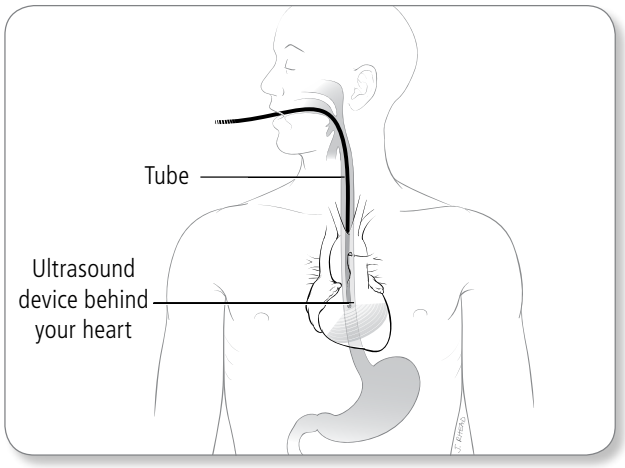
When you arrive at the hospital:

- You'll change into a hospital gown. A nurse will prepare your skin and attach large cardioversion patches and smaller electrode patches.
- A healthcare provider will place a cuff on your arm to monitor your blood pressure, and a light clip on your finger to monitor your blood oxygen.
- An intravenous (IV) line will be placed in your arm to give you medications.
- You will answer questions about your medical history and the medications you are taking.

What happens during the TEE test?

If you have a TEE test before the cardioversion, here's what happens:

- **Medication:** Through the IV, you may get a sedative to make you feel relaxed and sleepy. A throat spray, gel, or liquid will numb your throat.
- **Teeth protection:** You will be given a bite guard to protect your teeth.
- **Tube:** The doctor will move a small, flexible tube down your throat and into your esophagus. You will need to swallow to help it go down. You may gag a bit, but this is normal. It may help to remember that the tube is no larger than most food you might swallow.



- **Images:** The tube has a tiny ultrasound device at the end. Once the device is resting right behind your heart, the doctors take detailed images to check for clots. The procedure usually lasts about 10 to 15 minutes. When the images are finished, the tube will be removed from your throat.
- **Decision:** If the images show you have one or more clots in your heart, the cardioversion will NOT happen that day. You will need to take anticoagulant medication until the clots dissolve. The cardioversion may be attempted later. If the images show there are no clots, the team can move forward with the cardioversion.

What happens during cardioversion?

The cardioversion process takes just a few minutes. Here's what happens:

- **Medication:** Through the IV, you'll get medication that makes you sleep deeply and keeps you from feeling anything during the cardioversion.
- **Monitoring:** During the procedure and recovery period, healthcare providers will monitor your heartbeat, heart rhythm, oxygen level, and breathing.
- **Electrical charge:** The doctor will send a very brief electrical current to your heart through the cardioversion pads. Often, a normal heartbeat returns immediately. If not, the doctor will try again. Depending on how your heart responds, the doctor might send a shock to your heart up to three times. If your heart doesn't respond after the third time, the doctor will stop.
- **Watching for changes in your heart rhythm:** Because your heart rhythm is continuously monitored, the team will see right away if your heart has returned to a normal rhythm.

What happens afterward?

After the procedure, you may be moved to a recovery area, or you may stay in the same room. Healthcare providers will watch you closely for any complications.

When your recovery is complete, the IV will be removed from your arm. Once healthcare providers feel you are ready, you can go home. (In rare cases, you may need to spend the night at the hospital.)

What should I do at home?

- **Rest and relax.** You may feel weak or tired for the rest of the day, due to the medication you were given to make you sleepy. Be careful as you walk or climb stairs. Do not drive, use dangerous machinery, go to work, or make any important decisions for 24 hours, unless your doctor tells you otherwise.
- **Take medication as ordered by your doctor.** You may need to keep taking blood thinners or heart rhythm medication for several weeks or months afterward, even if the cardioversion is successful.
- **If you had a TEE test,** wait to eat or drink until the feeling comes back in your throat, usually a couple of hours. Start with liquids and soft foods such as gelatin, pudding, or soup. You might have a sore throat for a few days. Gargling with warm water or using cough drops may help.
- **If you had a cardioversion,** you may have red areas on your skin where the cardioversion pads were. These areas may be tender. The soreness and redness should go away in a few days.

When to get medical help

Call your doctor if you notice any of the following:

- Chest discomfort from the patches that lasts longer than a few days
- Heartbeat that becomes very fast or irregular, especially if this happens suddenly
- Feeling dizzy or short of breath
- Pain or bleeding in your throat or esophagus
- Difficulty swallowing more than 1 or 2 hours afterward

Talking with your doctor about cardioversion and the TEE test

The table below lists the most common potential benefits, risks, and alternatives for cardioversion and for the TEE test. Other benefits and risks may apply in your unique medical situation. Talking with your doctor is the most important part of learning about these risks and benefits. Don't be afraid to ask questions. It's important to have all your questions answered before you agree to a recommended procedure.

Potential benefits	Risks and potential complications	Alternatives
Cardioversion can restore your heartbeat to a normal rhythm. In the process, it can ease symptoms caused by a fast or irregular heartbeat, such as dizziness, shortness of breath, extreme tiredness, or chest discomfort. **A TEE test** helps your doctor check to see if there are clots in your heart before cardioversion. It helps to prevent a blood clot from being released during cardioversion.	**Cardioversion** risks and potential complications: • You may have soreness or redness on your chest where the cardioversion pads were used. This is usually mild and temporary. • An irregular or fast heartbeat can return later. More than half of patients who have cardioversion need to have it again later at some point. • You may have an allergic reaction to the anesthesia medication. Tell your doctor if you have had reactions to anesthesia in the past. • In rare cases, cardioversion can dislodge a clot that has formed in your heart. The clot can cause a stroke or other complications. Healthcare providers work to prevent this with anticoagulant medications, using a TEE test to check for clots before the procedure, or both. • In rare cases, the heart rhythm problem can get worse. If the procedure causes a severe problem, you will have emergency treatment. **TEE test** risks and potential complications: • You may have temporary, minor discomfort in your throat or mouth. • In very rare cases, the test can injure your esophagus (food pipe), which can cause infection or bleeding. If this happens, the problem will be treated right away. **Serious problems with cardioversion or the TEE test are rare.**	**Alternatives to cardioversion** include: • Taking medication to restore your heart rhythm. • Having heart surgery or a cath lab procedure, if the cause of the problem can be treated. • Watching and waiting, depending on your symptoms and doctor's advice. **The alternative to a TEE test** is having the cardioversion without this test. But if a TEE test is recommended before cardioversion, it's a good idea to have the test. It can increase your safety during the cardioversion.

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