

Cardiology

CardioMEMS™ HF System

What is Heart Failure?

Heart failure happens when the heart is unable to effectively pump blood throughout the body. It usually occurs because the heart has become too weak or too stiff. The most common causes of heart failure are a previous heart attack, high blood pressure or cardiomyopathy, which is a disease affecting the heart muscle. Cardiomyopathy can be inherited or can develop from infections, pregnancy or other factors.

Additionally, heart failure can result from other conditions like, heart valve disease, abnormal heart rhythms, congenital heart conditions or endocarditis, an infection that affects the heart. Certain lifestyle factors, such as excessive alcohol consumption can also lead to heart failure. Other causes may include anaemia, thyroid gland disease or treatments related to cancer.

Common symptoms of heart failure are breathlessness, fluid retention leading to swelling in the body and a general sense of tiredness.

What does a CardioMEMS™ device do?

Before you notice any symptoms of heart failure, the pressures in the blood vessels around your heart change. The CardioMEMS™ Pulmonary Artery (PA) sensor can detect these changes in pressure. Your doctor can use this information to adjust your medications and recommend different lifestyle changes. By keeping PA pressures lower, your doctor can help reduce your risks of developing new symptoms or the hospital visits. Studies show that PA pressure is a good indicator of worsening heart



Patient Information

failure. Patients whose clinicians used the CardioMEMS HF System had fewer hospitalisations compared to those patients who did not.

This leaflet should answer some of your questions, tell you how the system operates and what to expect during and after the sensor implant. If you have more questions after reading, please talk to your doctor.

Managing your heart failure

Managing your heart failure can help reduce its impact on your daily life. You can improve how you feel by making changes in your diet and daily activities, taking the medications your doctor prescribes, and measuring your pulmonary artery (PA) pressures.

Medications

Medications play an important role in treating heart failure. Research shows that heart failure medications can help you:

- live longer
- have fewer symptoms
- increase your activity level
- have more energy
- experience less swelling
- breathe more easily
- stay out of hospital

Lifestyle choices can impact your heart health

- **Sodium:** It's important to decrease the amount of sodium you eat because heart failure causes your body to hold onto extra sodium. This causes extra fluid to build up and can lead to swelling of the ankles, feet or abdomen, shortness of breath or weight gain.
- **Tobacco:** Tobacco products (like cigarettes and chewing tobacco) contain nicotine, a chemical that causes blood vessels to become narrower. This raises blood pressure and pulse rate, making more work for your already weakened heart. Avoid tobacco products altogether.

Patient Information

- **Alcohol:** Alcohol decreases the strength of the heart's contractions, which isn't good for a heart with heart failure. Limit alcohol to 1 drink or less per day.
- **Exercise:** Your heart is a muscle, and it benefits from exercise, just like any other muscle in your body. Activity can help you feel better, decrease your symptoms, and improve your heart's function. Ask your doctor about a walking program that will help you build your tolerance for exercise.

Where does The CardioMEMS™ HF system fit in?

By measuring your pulmonary artery (PA) pressure regularly, you're giving your doctor the information they need to adjust your medications and lifestyle before symptoms affect your health or daily life. The CardioMEMS™ HF System is a useful tool that helps your doctor tailor your care. The pressures in the blood vessels around your heart change before you notice any symptoms of heart failure. By keeping your pressures lower, your doctor can reduce your chances of developing new symptoms or going to the hospital.

What can you expect from the procedure?

The CardioMEMS™ PA Sensor is about the size of a pound coin, with two thin loops on each end. It doesn't have any batteries or wires. The sensor is placed in the pulmonary artery (the blood vessel that moves blood from your heart to your lungs), and it sends information to a bedside unit, which then transmits it to a secure website your doctor can access.

To implant the device, you may receive a mild sedative before and/or during the procedure, but you will be awake so you can follow instructions. A nurse will clean a spot on your upper thigh and a local anaesthetic will be injected there. An electrocardiogram (EKG) will constantly monitor your heart rate and rhythm during the procedure.

Your doctor will make a small cut and insert a device called a catheter into your femoral vein. Using a fluoroscope (a type of x-ray), the doctor will guide the catheter through your body to your heart and into your pulmonary artery. The doctor will make sure the catheter is in the right position and then release the sensor into your artery. The doctor will then

Patient Information

hold an antenna to your back, chest, or side to check if it can pick up signals from the sensor.

The duration of the procedure depends on your specific anatomy and how long it takes to find a good spot for the sensor. After the procedure, you may be asked to lie flat on your back for a few hours to prevent bleeding. You may feel some mild discomfort at the injection site as you recover. However, you should be able to return to normal activities soon after the procedure.

The CardioMEMS™ device is permanently implanted

You won't feel it, and it won't interfere with your daily activities. The sensor will not interfere with other devices you may have such as a pacemaker or defibrillator.

Implant Risks

Like any medical procedure, there are risks associated with the implantation of a sensor, although complications are very rare.

Some possible risks are:

- Arrhythmias
- Bleeding
- Death
- Device Embolization
- Hematoma
- Infection
- Heart attack (myocardial infarction)
- Stroke
- Blood clots (thrombus)
- Transient ischemic attack (a mini stroke)

Make sure to discuss with your doctor so that you thoroughly understand all of the risks and benefits associated with the implantation of this sensor.

Patient Information

What happens after my implant procedure?

As you recover from your implant procedure, it is important that you follow your doctor's instructions, including:

- Report any redness, swelling or drainage from the insertion site.
- Walk, exercise, and bathe according to your doctor's instructions.
- Contact your doctor if you develop a fever that doesn't go away in 2 - 3 days.
- Ask your doctor any questions about your device, heart failure or your medication.

You will receive training on how to set up and take readings with your Patient Electronics System before you go home. If you have questions after you're home, you can contact a customer service representative or refer to the Patient Electronics System video for guidance.

What equipment will you have?

Taking pulmonary artery (PA) pressure readings will become part of your daily routine. It will only take few minutes, lying down, each day. If you're having trouble getting a signal or it's taking longer than usual, please contact technical support for help.

Your Patient Electronics System is portable but most patients set it up in their bedroom for maximum efficiency. Electric blankets and waterbeds can interfere with the system. If you have either, consider taking your reading in a different room.

Electromagnetic interference from theft detection systems, airport security systems and similar devices might affect sensor readings. However, it is highly unlikely that you would be taking a reading when you are close to these devices.

Antenna: The antenna is paddle-shaped and is placed inside a pillow to make it easier and more comfortable for you to take readings.

Patient Information

Patient electronics unit: The Patient Electronics Unit reads the pressure measurement from your sensor wirelessly. For instructions on setting up the system, refer to the CardioMEMS™ Patient Electronics System guide that was included with the system.

Technical Support

If you have questions on the CardioMEMS™ HF System, please contact technical support: UK/Ireland: 0121 306 055.

The Trust has access to interpreting and translation services. If you need this information in another language or format, please contact 0845 310 9900 and we will do our best to meet your needs.

The Trust operates a smoke free policy.

Did we get it right?

We would like you to tell us what you think about our services. This helps us make further improvements and recognise members of staff who provide a good service.

Have your say. Scan the QR code or visit:

www.uhcw.nhs.uk/feedback



Document History

Department:	Cardiology
Contact:	0845 310 9900
Updated:	June 2024
Review:	June 2027
Version:	1
Reference:	HIC/LFT/2870/24