

## An implantable cardioverter defibrillator (ICD) summary for the patient

Irregular heart rhythms are called arrhythmias. Some can be life-threatening. An ICD is a device that monitors the heart rhythm continuously. If the heart starts to beat dangerously fast the ICD is able to detect this and treat it, potentially saving the person's life. Below are some answers to questions you may have about arrhythmias and ICDs. For additional information, we encourage you to talk to your doctor.

### Why does your doctor recommend a defibrillator?

Your symptoms, heart history, or future health may indicate that you are at risk of sudden cardiac arrest (SCA). SCA is a serious condition, which if not treated within minutes, can lead to death. A defibrillator is designed to administer lifesaving therapy in the event of SCA.

### What are Defibrillator devices?

Defibrillators have been implanted in humans for more than 30 years. Defibrillator devices are used to sense dangerously rapid rhythms in the heart and deliver energy to the heart to restore a normal rhythm.

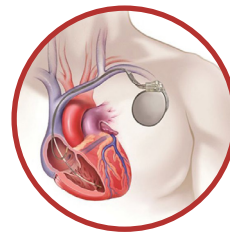
Conventional defibrillator systems, known as a transvenous implantable cardioverter defibrillator (TV-ICD), use a wire (known as a lead) which is fed into the heart through a vein and attached to the heart wall.

Another option for some patients that need an ICD is the subcutaneous ICD. Unlike the transvenous ICD, the electrodes of the S-ICD are placed just under the skin and not in the heart, leaving the heart and blood vessels untouched and intact.

A newer option for some patients is an extravascular ICD. The lead is placed below the breastbone and is outside of the heart and veins. The defibrillator is placed below the left armpit.

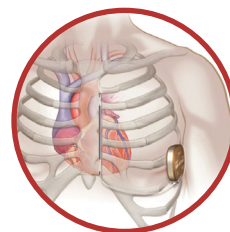
### How are the defibrillators different?

A traditional implantable cardioverter defibrillator (ICD), otherwise known as a transvenous ICD (TVICD), has one or more leads that enter through your veins. An ICD has one or more leads that enter through the veins into the heart and across the valve, allowing the device to provide pacemaker functions as well as defibrillation. The S-ICD and EV-ICD have the same defibrillation (shock) function as the TV-ICD, however, the device sits on the side of your chest, and the lead goes on top of the sternum (S-ICD) or under the sternum (EV-ICD). EV-ICD also has anti-tachycardia pacing and pause prevention pacing (NOT bradycardia pacing like the TV-ICD). Be sure to ask your doctor what is suitable for your condition.



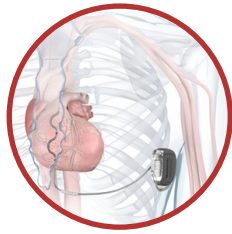
#### Transvenous ICD

The device is implanted near the collarbone. One or two leads are fed through a vein into your heart and across your heart valve. The leads are attached to your heart wall for sensing of arrhythmias and therapy delivery.



#### Subcutaneous ICD

The device is implanted on the left side of the chest next to the rib cage and one lead is implanted just under the skin above the breastbone. In contrast to the TV-ICD this system sends a shock without the use of wires implanted in the heart.



### Extravascular ICD

The device system is made up of two parts:

1. EV-ICD lead
2. EV-ICD device

The device constantly monitors the heart to check if your heart is beating too fast, or irregularly, if so, the EV-ICD will send small electrical signals to correct the heart rhythm (known as anti-tachycardia pacing/ATP). If the heart rhythm continues to beat too fast, it will deliver another shock to reset and return to sinus rhythm. It can also monitor and treat a heart rhythm that is too slow by sending signals to the heart.

### Can I choose which type of device I want?

Unless you have a defibrillator implanted during emergency surgery, you may be able to choose which type of device you want to have fitted. However, it is important that you make this choice together with your doctor. For example, a transvenous ICD is also able to pace the heart when the rhythm becomes too slow (known as 'bradycardia'), whilst a subcutaneous ICD isn't. Your doctor can advise which device is best suited to you and provide you with the expert advice you need to make an informed choice. You will be living with the device so it is important that it fits your body, your condition and your lifestyle.

### How reliable will my ICD and lead be?

ICDs are extremely reliable. They have been rigorously tested in order to meet the stringent criteria set by regulatory authorities around the world. If you are interested in finding out more, you could search the web or ask your doctor about various manufacturer's Product Performance Reports (PPR) for your ICD and lead. All manufacturers are required to publicly report any unexpected issues

with the devices and other related information. Recently, there has been an increased focus on reliability of the leads, so make sure to also ask for more information and research the reliability of the leads that will be implanted in you.

### How long will my ICD battery last?

Like anything that is battery operated, the life of an ICD will depend on how much the battery is used; the battery is used every time the device delivers therapy as well as during simply monitoring the heart rhythm. ICDs are powered by special, long-lasting batteries. They do not suddenly wear out, but instead give you around six months notice that they are reaching the end of their battery life and will need replacing. ICD batteries may last as little as 4 years but with new technology, they can last 10 years or more.

Battery life is checked and documented at each clinic follow-up, so your cardiac physiologist and cardiologist will be able to plan your battery replacement procedure.

### Will my ICD ever need replacing?

The ICD battery will need replacing every 4 – 10+ years depending on the life span of the particular device used. Changing the ICD battery requires a small operation that does not take as long as the initial ICD implantation because the leads normally do not need to be replaced unless they are damaged. The longer the battery lasts, the fewer operations you will need.

**It is safe to use an automated external defibrillator (AED) on someone who has a pacemaker or implantable cardioverter defibrillator (ICD). It is important not to place the pads in contact with, or directly over the device. The pads are usually placed on the upper right of the chest and on the left side of the rib cage, so a device should not get in the way. If someone has an implanted device, you will notice a scar and a bump. Place the pad to the side of the device (about 3cm).**



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The shock produced could affect the functioning of the pacemaker or device, however the benefits of using the AED to save someone's life outweigh this potential risk. If you receive CPR or defibrillation, you should have your device checked afterwards to ensure the settings are still accurate. If you have any questions or concerns, please contact your cardiologist.

### Where can I find more information about ICDs?

[www.s-icd.eu](http://www.s-icd.eu)  
[www.lifebeatonline.com](http://www.lifebeatonline.com)

A list of more websites can be found at  
[www.heartrhythmalliance.org](http://www.heartrhythmalliance.org)

To view our patient resources, scan the QR code below:



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