

## **Information for patient undergoing ICD insertion:**

### **Why do I need an Implantable Cardiac Defibrillator (ICD)?**

Implantable Cardiac Defibrillators are indicated for patients that are at high risk of having lethal cardiac arrhythmias leading to sudden cardiac death. ICDs continuously monitor the heart's rhythm, effectively identify abnormal and lethal arrhythmias and deliver therapies to stop the arrhythmia and save the patient's life. ( for information on ICD device click this link: <https://flahrs.com/wp-content/uploads/2016/07/ICDs.pdf>)

### **What can cause sudden cardiac death?**

There are several cardiac diseases that can lead to sudden cardiac death. The most common is acute ischemia of the heart or a heart attack. If the heart suffers significant damage following heart attack the heart becomes weak and a scar is formed in the muscle of the myocardium, both these conditions can lead to the origin of lethal arrhythmias. Other cardiac diseases can also cause weakening of the heart such as alcohol abuse, atrial fibrillation or arrhythmias from the top chambers of the heart that can increase the rest heart rate for a long period of time.

### **Non ischemic Cardiomyopathy:**

Non ischemic Cardiomyopathy are all the diseases that do not originate from lack of circulation to the heart muscle. These include:

**Dilated cardiomyopathy (DCM):** It is a disease that thins and weakens the heart muscle causing the left ventricle to become dilated and prevents the ability to pump blood efficiently to the body. DCM is 20-50 % of the time hereditary, it can be caused by myocarditis (inflammation of the heart muscle due to a viral infection), from medication that cause injury to the heart such as chemotherapy, fast heart rated from atrial arrhythmias such as atrial fibrillation, or the cause can be unknown or idiopathic.

**Alcohol induced cardiomyopathy:** Alcohol abuse can cause hypertension leading to cardiac dilatation and hypertrophy leading to DCM.

**Post-partum cardiomyopathy:** Is a rare cause of cardiomyopathy that occurs between the last month of pregnancy and 5 months post-delivery. The cause is unknown, but it is thought to be related to viral myocarditis, autoimmunity hemodynamic stresses, hormonal insults or genetics.

**Arrhythmogenic Right Ventricular Dysplasia (ARVD):** Type of cardiomyopathy where proteins that normally hold the heart muscles of the heart together are lost and replaced by fibrous scar tissue and fat deposits, causing the heart muscle walls to become thin and affect the electrical activity of the heart and therefore causing arrhythmias. ARVD is often genetic.

**Hypertrophic cardiomyopathy:** When the heart muscle (most often the left ventricle) becomes thickened, causing at times obstruction of the outflow of blood from the heart to the body. The thickening of the muscle causes changes in the electrical signals of the muscle cells causing lethal arrhythmias. HCM is also largely a genetic condition in 40 -70 % of the time. It can also be seen with metabolic and mitochondrial disorders, uncontrolled hypertension and is seen in endurance athletes. Sometime it can also be idiopathic.

### **Ischemic Cardiomyopathy:**

Ischemic cardiomyopathy happens following a heart attack or when there is an ongoing lack of circulation to the heart muscle. Sometimes when the injury to the heart is significant, despite intervention with CABG or coronary stenting and medications, the heart cannot recover. The heart muscle develops a scar and becomes weak. Both these conditions can lead to lethal arrhythmias and sudden cardiac death.

Lethal arrhythmias can also be caused by other genetic conditions that specifically change the electrical conduction of the heart or cardiac channelopathies including conditions such as: Brugada syndrome, Catecholaminergic polymorphic ventricular tachycardia, long QT syndrome and short QT syndrome. These conditions can or not be evident on patient's EKGs but can be only discovered only after a lethal arrhythmia occurs.

### **What are lethal arrhythmias?**

Lethal arrhythmias are abnormal fast rhythms that originate from the bottom chambers of the hearts, the ventricles. These can be called ventricular tachycardia and ventricular fibrillation. They are too fast and chaotic to allow adequate pulsation or blood flow from the heart to the rest of the body causing a pulseless rhythm.

### **How can ICDs save my life?**

ICDs are devices that have the capability to monitor the patient's heart rhythm constantly. If a ventricular arrhythmia occurs, then the ICD will intervene promptly usually by pacing the heart faster than the arrhythmia itself, which is called Anti-tachycardia Pacing (ATP) in short bursts or by shocking or defibrillating the heart.

### **Will I feel ventricular arrhythmias?**

How much patients are symptomatic with ventricular arrhythmias depend on how fast and how long the arrhythmia lasts. If it is a slow arrhythmia, most patient are asymptomatic. If the arrhythmia is fast patient can have chest pain, dizziness, or fainting.

### **Will I feel ICD therapies being delivered?**

ICDs are programmed by electrophysiology physicians to adequately treat ventricular arrhythmias with the least discomfort to patients. Usually patient do not feel ATP being delivered, however ICD shocks can be described as a chest thump or that a "kick to the chest".

### **What should be done if I feel an ICD shock or if I faint:**

It is important for patients and families to be aware of what to do in these situations. Make sure you always have your ICD implant card with you or have the device's brand name memorized. The emergency room will need this information.

When a patient feels one ICD shock and feel no other symptoms, the patient should call the Electrophysiologist's office to have the ICD checked promptly. At that time, the patient will be seen by a provider either a Nurse Practitioner and the device representative and the ICD interrogation will be evaluated, reprogrammed as needed and medications will be adjusted accordingly.

NEVER drive yourself, have a family member or a friend drive you or call 911 if nobody is available.

If you are driving and feel unwell or experience a shock pull over to the side of the road and call 911.

When a patient feels 2 or more shocks or have a fainting spell then 911 should be called. EMS will be able to provide immediate attention, and when in the Emergency Room the device representative will check the ICD then. Again, after the ICD is checked, reprogramming will be done as needed, interventions will be recommended and done, and medication will be administered accordingly.

<https://flahrs.com/wp-content/uploads/2016/09/ICD-shock.pdf>

### **What are phantom shocks:**

Phantom shocks happen when patient have the perception of a shock, but when the ICD is interrogation no defibrillation was delivered. This happens in a small percentage of patients. Usually in patients that have already received a real shock therapy and can be due to anxiety.

### **What happens when the ICD battery is low?**

The normal follow up frequency of patients with ICDs should be every 3 months, either in office, or intermittently with remote device interrogations. During these device interrogations, the battery status will be evaluated. When the device's battery is reaching the Elective Replacement Interval period (ERI) your provider will schedule the device to be replaced with an outpatient procedure. If the ERI is reached a beeping sound or a vibration will be felt or heard by the patient at which time the patient should call the office for an appointment, device interrogation ( to confirm that the alarm is due to ERI) and schedule the device replacement.

For more information regarding ICDs:

<https://flahrs.com/education/>

[www.suddencardiacarrestuk.org](http://www.suddencardiacarrestuk.org)

[www.pacemakerclub.com](http://www.pacemakerclub.com)

[www.asktheicd.com](http://www.asktheicd.com)

### **Videos:**

ICD:

<http://pie.uhnresearch.ca/heartfailure/treatments/device-therapies/implantable-cardioverter-defibrillator-icd/>

<https://www.youtube.com/watch?v=FejwQWkwfUQ>

<https://www.youtube.com/watch?v=-cjExcUOR8U>

### **ICDs and Anxiety:**

Sometimes patients develop anxiety while living with an ICD. This happens in about 30 % of patients. This is a normal response while patients adapt to living with an ICD. However, anxiety should not be overwhelming to the point patients experience decreased quality of life.

Here are some tips you can follow to decrease anxiety while adjusting to living with an ICD:

1. Use this website, talk to your physician or make your own research to increase your knowledge about your cardiac disease, ICD, medications and how to respond when a problem arises such as an arrhythmia, fainting spell or an ICD shock.
2. Share this information with family or friends. Ask questions to your practitioners.
3. Always have your ICD manufacturer card with you or wear a medical bracelet with the same information. All ICD manufacturers have a 1 800 number you can call for any safety, restrictions information regarding your device.
  - a. Boston Scientific: <https://www.bostonscientific.com/en-US/patient-and-caregiver-support.html>
  - b. Medtronic: <https://www.medtronic.com/us-en/patients/patient-services.html>
  - c. St Jude Medical/ Abbot: <https://www.cardiovascular.abbott/us/en/customer-service.html>
  - d. Biotronic: <https://www.biotronik.com/en-us/contact> , <https://www.biotronik.com/en-us/patients>
  - e. Soren
4. Always have a phone within reach.
5. Avoid using “safety crutches” that can increase anxiety such as:
  - a. Constantly checking own heart rate and blood pressure
  - b. Avoiding being active or exercising
  - c. Relying on someone else for security
  - d. Avoiding certain behaviors that patient might associate with possible ICD shock or arrhythmias. This is a safety mechanism that the brain learns along someone’s life. It can be changed with mindfulness exercises to allow shifting negative thoughts and avoiding anxiety.
6. Work on being self-sufficient and self-reliant in terms of your health and safety, think as a survivor and not as a victim
7. Make a healthy lifestyle plan including nutritious diet, exercise that you enjoy as long is within your providers’ recommendations, meditate, practice adaptive yoga.

Support groups:

Support groups offer their members that share the same issues to share experiences, fears or concerns and learn and share coping strategies to cope with their problems.

Here are some support groups:

<https://ifkmc.com/patients/support-groups.dot> (beating hearts club)

<https://www.facebook.com/groups/icdsupport/>

<https://www.facebook.com/ICD.pacemaker/>

Yoga:

Yoga is an Indian practice that incorporates mental, physical and spiritual exercises and disciplines which brings harmony between mind, body and environment.

10 benefits of practicing yoga:

1. Increases flexibility
2. Builds strength
3. Improves posture
4. Maintains joint health
5. Powerful mindfulness practice promoting positive mental health
6. Reduces stress
7. Lowers blood pressure
8. Ability to learn acceptance and self-love which helps make healthier life choices
9. Improves breathing
10. Improves body's natural healing process

<https://www.yogauonline.com/yoga-for-heart-disease/yoga-for-heart-disease-study-shows-reduced-anxiety-icd-heart-patients>

Meditation:

Meditation is a practice that uses the mind and body in order to increase calmness, physical relaxation, improving psychological balance. This practice can help patients cope with illnesses and lead to improvement of overall health and sense of wellbeing.

Please refer to you tube for multiple Meditation videos or phone apps for free meditation session activities.

Calm app

<https://www.heromovement.net/blog/free-guided-meditation-resources/>