

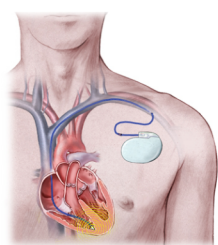
Implantable Cardioverter Defibrillator

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The Implantable Cardioverter Defibrillator (ICD) is designed for patients whom are at risk for recurrent or sustained ventricular tachycardia or fibrillation. Ventricular tachycardia is when the heart has a rapid, regular heart rhythm and the rhythm originates from the lower chambers of the heart. Ventricular fibrillation is when the heart rhythm is abnormal, chaotic and irregular. Both of these conditions are extremely dangerous and can cause Sudden Cardiac Death (SCD).

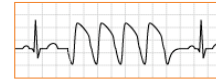
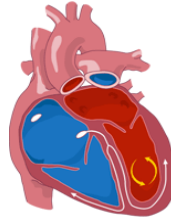
Ventricular tachycardia and fibrillation occur most often in patients that have damaged heart muscle or coronary artery disease. When ventricular tachycardia has occurred the heart is pumping fast and in one continuous loop, thus causing the heart chambers little time to fill resulting in dangerously decreased amounts of blood being pumped to the body. Ventricular fibrillation has a similar result. The heart is pumping chaotically and the chambers don't contract properly, causing results in dangerously decreased blood flow. These two conditions are extremely dangerous and are treated with medication; however medication is not a very effective way.

The ICD has been proven to be an effective way to treat these two life threatening conditions. The ICD is implanted under the skin near the collarbone, chest, or abdomen. An ICD works by monitoring the heart rhythm and when an abnormal rhythm is detected delivering a shock to the heart in order to "reset" the heart rhythm. The implant under the skin contains a generator, which is responsible for the monitoring of the heart rhythm and delivering the shock. There are leads that are placed either in or on the surface of the heart, which connect to the generator. These leads bring the signal to the generator.



The ICD has been proven an effective way of monitoring and preventing death from ventricular tachycardia and fibrillation. Time is one of the important factors when surviving one of these conditions. The ICD is able to quickly detect and

reset the abnormal rhythm, making it an effective solution.



A study was conducted to determine if treatment with medication (amiodarone) or an ICD improves the prognosis for patients. SCD is the leading cause of death for patients with congestive heart failure (CHF). The study was conducted with 2521 patients who have case 1 or 2 CHF and left ventricular ejection fraction of 35 percent or less. Of the patients 847 had conventional treatment plus placebo, 845 plus amiodaron, and 829 had an ICD.

At the conclusion of the study the results showed that the amiodarone had no beneficial effect on patient survival. The ICD had an increased survival rate of about 23%. Since an ICD must be inserted through open chest surgery there are arguments for medications vs. surgery. The surgery had a clear benefit to those with CHF. The ICD used was a single lead ICD. Patients who have a decrease ejection fraction were proven to have the most benefit from an ICD. In the future more studies will be conducted to determine if an ICD will benefit patients who haven't had, but are at high risk for life threatening ventricular arrhythmias.

References:

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