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What are implantable cardiac defibrillators?

An implantable cardiac defibrillator (ICD) is a small electronic device installed inside the chest to prevent sudden death from cardiac arrest due to life threatening abnormally fast heart rhythms (tachycardias). The ICD is capable of monitoring the heart rhythm. When the heart is beating normally, the device remains inactive. If the heart develops a life-threatening tachycardia, the ICD delivers an electrical "shock(s)" to the heart to terminate the abnormal rhythm and return the heart rhythm to normal.

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What is a heart attack?

How does a normal heart function?

The heart is an organ consisting of four chambers that pump blood. The two upper chambers are called the right and left atria, and the two lower chambers called the right and left ventricles. The right atrium receives venous blood (oxygen-poor blood) from the body and pumps it into the right ventricle. The right ventricle pumps the oxygen-poor blood to the lungs to receive oxygen. The oxygen-rich blood from the lungs then travels to the left atrium and is pumped by the left atrium into the left ventricle. The left ventricle delivers the oxygen-rich blood to the rest of the body. In addition to oxygen, the blood carries other nutrients (glucose, electrolytes, etc.) to the organs.

In order to keep a body healthy, the heart must deliver a sufficient amount of blood to the body. As a pump, the heart is most efficient in delivering blood when functioning within a certain heart rate range. Normally, the heart's natural pacemaker called the SA node (a special tissue located on the right atria wall), keeps the heartbeat (heart rate) in the normal range. Electrical signals generated by the SA node travel along special conduction tissues on the walls of the atria and the ventricles. These electrical signals cause the heart muscles to contract and pump blood in an orderly and efficient manner.

How do abnormal heart rhythms decrease blood delivery by the heart?

Abnormal heart rhythms, either too slow or too fast, decrease the delivery of blood by the heart. Bradycardia is a condition in which the heart rate is too slow. Bradycardias can be due to diseases of the SA node or the conduction tissues of the heart. The slow-beating heart delivers an insufficient amount of blood to the body. Please see the [Pacemaker](#) article of MedicineNet.com for information regarding the causes and treatment of bradycardias.

Tachycardia is a condition in which the heart rate is too rapid. When the heart pumps too fast, the ventricles do not have enough time to fill their chambers with blood before the next contraction. Therefore, tachycardias can decrease the amount of blood delivered to the body. One of the effects of decreased blood delivery to the body is low blood pressure.

Next: [What is the cause of tachycardias?](#)

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A heart attack (also known as a myocardial infarction) is the death of heart muscle from the sudden blockage of a coronary artery by a blood clot. Coronary arteries are blood vessels that supply the heart muscle with blood and oxygen. Blockage of a coronary artery deprives the heart muscle of blood and oxygen, causing injury to the heart muscle. Injury to the heart muscle causes [chest pain](#) and chest pressure sensation. If blood flow is not restored to the heart muscle within 20 to 40 minutes, irreversible death of the heart muscle will begin to occur. Muscle continues to die for six to eight hours at which time the heart attack usually is "complete." The dead heart muscle is eventually replaced by scar tissue.

Approximately one million Americans suffer a heart attack each year. Four hundred thousand of them die as a result of their heart attack.

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