

The Artificial Pacemaker
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The heart has the ability to beat rhythmically approximately 100,000 times a day and pumps about five quarts of blood each minute or 75 gallons of blood every hour. Its steady pumping rhythm sends oxygen-rich blood and nutrients to all of your body's cells with each heartbeat.

Special heart tissues generate electrical signals that travel along pathways through the heart every time it beats. The heart has its own natural pacemaker known as the Sinoatrial (SA) node. This works in conjunction with another node called the Atrioventricular (AV) node. The SA operates as the heart's spark plug, it generates small electrical signals which cause the atria to contract, forcing blood into the ventricles. This fires about 60-100 times per minute depending on the individual's activity. Next, the electrical impulses are sent to the AV node, which is located between the atria and ventricles. This causes the ventricles to contract and therefore pushes the blood out of the heart into the lungs to be oxygenized or the oxygenated blood into the body's arteries.

In many people the heart fails to beat properly either from a condition known as bradycardia in which the heart beats slowly or from an irregular heart beat. In other cases, there is a blockage in the electrical pathways, so the signal never reaches the heart muscle.

For these people the use of an artificial pacemaker is required. A pacemaker is generally comprised of 3

main components, the Pulse Generator, the Pulsing Lead and the Programmer. The PG supplies the electrical signal to cause the heart to beat. That signal is carried from the generator to heart via the PL. This lead may either have either 1 or 2 leads attached to it. Also, information about the heart's beating is relayed back to the PG so it can cease operation when the heart is beating normally. The Programmer is a wand held externally from the pacemaker and it has the ability to communicate with it. Necessary adjustments can also be made through the use of this wand.

Patients with their new pacemakers can resume normal activities and often times do more because of the regular heartbeats they now have. Newer pacemakers have technology that won't interfere with cell phone and household appliances. They are powered by a long life lithium battery and usually last about 15-20 years depending on the manufacturer.

<http://www.helenacardiology.com/pacemaker.htm>
<http://www.cardiologychannel.com/pacemaker/>
<http://www.ohiou.edu/russprize/pacemaker.html>