
The Defibrillator

A fibrillation can be described as muscular twitching involving individual muscle fibres acting without coordination. In the heart this is caused by the electrical charges that make the heartbeat become irregular and rapid. If untreated, fibrillation can lead to cardiac arrest, also known as myocardial infarction, and death. The defibrillator, if used as soon as possible, is an effective means of neutralising the fibrillation. Used both outside and inside the body, defibrillators have been used by paramedics for over sixty years. They are relatively easy to use and are accessible in many public places. Countless lives have been saved because of defibrillators.



The History

The defibrillating technique was first demonstrated in 1899 by psychologists J. L. Prevost and F. Battelli. They discovered that a weak electrical stimulus could fibrillate a heart and a stronger one could reverse the fibrillation. Initially tested on dogs, the defibrillator was not used on a human until 1947, by American surgeon Claude Beck. His theory was that ventricular fibrillation often occurred, as he put it, in "hearts that are too good to die", hearts that were fundamentally healthy. He restored the fibrillating heart of a fourteen year old boy who had a congenital chest defect. Until the 1950's, defibrillation could only take place on hearts that were exposed in an open chest cavity during surgery.

In 1959, Bernard Lown commenced research into an alternative technique which firstly involved charging of a bank of capacitors and then delivering the charge to the heart, by way of paddle electrodes. In the 1980's, biphasic defibrillation became the defibrillation method of choice. This method alternates the direction of the pulses, using less energy, thus reducing the amount of electrical burns on the patient and damage to the myocardium, or heart muscle.

Types

Today's defibrillators can be external or internal. The external defibrillators range in difficulty level. The devices found in ambulances require a level of skill to use, as the care giver has to monitor what exactly has gone wrong. Automated external defibrillators can be used by anyone and are fitted with computer technology to analyse the heart rhythm and advise the user if a shock is required. The automated devices take time, when compared to a professional undertaking defibrillation. The internal defibrillators are either found only in an operating room, to be used by surgeons, or they are implanted into a patient, much like a pacemaker, and administer shocks for various life threatening arrhythmias, depending on the patient's condition.

The Packer Whacker

In Australia, defibrillators are colloquially known as Packer Whackers, named after media mogul Kerry Packer. In 1990, Mr Packer had a cardiac arrest and was clinically dead for six minutes. Defibrillators in ambulances were rare at that time, though the vehicle sent to attend to Mr Packer did happen to have one on board. Successfully revived, he donated a large sum of money to the New South Wales ambulance service to ensure every ambulance carried a defibrillator.