



What is SCA (Sudden Cardiac Arrest)?

Sudden Cardiac Arrest Facts

- It strikes without warning killing 250 people a day in the UK
- Less than 5% of its victims survive out of hospital in the UK
- It kills more people than lung or breast cancer
- It can happen to anyone even young athletes
- Defibrillation is the only treatment

Sudden Cardiac Arrest (SCA) is a condition in which the heart stops beating suddenly and unexpectedly due to a malfunction in the hearts' electrical system. The malfunction that causes SCA is a life-threatening abnormal rhythm, an arrhythmia.

The most common arrhythmia is ventricular fibrillation (VF). When in VF, the hearts' rhythm is so chaotic (called "fibrillating") that the heart merely quivers, and is unable to pump blood to the body and brain. Once a heart has entered VF, sudden cardiac arrest occurs. A victim in SCA first loses his or her pulse, then consciousness, and finally the ability to breathe.

All of this can happen quickly - in fact in a matter of seconds. Sudden cardiac arrest strikes without warning. It knows no boundaries, claiming hundreds of thousands of lives around the world every year. People of all ages, fitness levels and walks of life, succumb to it and most don't survive.

Who can be affected by SCA?

Unfortunately, anyone can suffer sudden cardiac arrest. SCA is unpredictable and can happen to anyone, anytime, anywhere - even teenagers. Risk factors of SCA include a previous heart attack, previous SCA event, fast rhythm in the lower part of the heart, family history of SCA, and heart failure.

Although pre-existing heart disease is a common cause of cardiac arrest, many victims have never had a heart problem. Among the causes of SCA in younger people without previous heart attack or heart failure are inherited or congenital arrhythmias; these include Wolff-Parkinson-White syndrome, the Long Q-T syndromes, Brugada syndrome, Hypertrophic Cardiomyopathy and ARVC.

Wolff-Parkinson-White syndrome (WPW)

This results from some "extra wiring" connecting the upper (atria) and lower (ventricles) chambers of the heart. This additional circuit occasionally allows very fast and unstable rhythms to develop and this can lead to SCA. These rhythm disturbances most often become apparent in teenage years or the early twenties, but occasionally start earlier or later.

The most common rhythm disturbance is SVT, involving both the normal and additional conduction circuits in the heart, but this can occasionally degenerate to VF. The diagnosis is usually obvious from an ECG, although sometimes the characteristic appearances are not evident all the time and may require additional testing to diagnose. Many patients with WPW, however, have little or no problem throughout their lives.

Long Q-T syndrome

This is in fact a number of similar, inherited syndromes which make the patient prone to rapid rhythm disturbances (VT) which can quickly degenerate into VF. The cause lies in the heart muscle cells which take slightly longer to recover from a heart beat (only by about a tenth of a second) but are prone to chaotic rhythm disturbances as a result. In the presence of long Q-T syndrome, SCA may be precipitated by such things as certain types of exercise, loud noises, or other sudden stimuli.

Events usually occur in children or young people, but can be very variable. The diagnosis is again apparent from the ECG and this should be examined in relatives of a patient shown to have long Q-T syndrome.

Brugada Syndrome

This is a rare inherited tendency to SCA which again relates to the functioning of the heart muscle cells; it most commonly presents in the thirties and has a tendency to cluster in certain countries. Like the long Q-T syndromes, it can usually be diagnosed from an ECG but may need additional tests. Affected people suffer sudden collapse ("syncope") due to VF or a very rapid form of VT called Torsade de Pointes. This can lead rapidly to SCA unless treated with defibrillation.

Patients with previous heart attack or heart failure or other known heart problems

SCA is usually caused by VT and/or VF starting in scars or damaged areas in the heart muscle or very occasionally due to the effects of other drugs that the patient may need to take.

Is sudden cardiac arrest the same as a heart attack?

Sudden cardiac arrest (SCA) is not the same thing as a heart attack, although a person suffering a heart attack has an increased risk of SCA.

How is sudden cardiac arrest treated?

When someone suffers a sudden cardiac arrest, defibrillation is the only way to re-establish a regular heartbeat. Cardiopulmonary resuscitation (CPR) will not restart a heart in sudden cardiac arrest. CPR is just a temporary measure used to continue a minimal supply of oxygen to the brain and other organs.

What is CPR?

Often people feel that CPR is enough to save a life, but when you tell them that CPR has a 5% success rate compared with a 50% success rate with an AED, they begin to realize the importance of needing an AED.

SUDDEN CARDIAC ARREST and DEFIBRILLATION

Early defibrillation is the key to surviving SCA.

- Survival rates drop 7—10 percent every minute without defibrillation
- CPR is a temporary measure that maintains blood flow and oxygen to the brain.
It will not return a heart to a normal rhythm. Only defibrillation can return a heart to a normal rhythm
- Quick action by the first person on scene can truly make a difference in saving a life
- Automatic external defibrillators make early defibrillation readily available and are easy to use, even for laypeople.

What is an Automatic External Defibrillator (AED)?

An AED is a small, portable device that analyzes the heart's rhythm and prompts the user to deliver a defibrillation shock only if it is needed. Once turned on, the AED guides the user through each step of the defibrillation process by providing voice and/or visual prompts.

Who can use an AED? ...Anyone...Minimal Training...No Medical Background!

Putting AEDs in the Community, Offices, Shops, Public Places, Home... can dramatically reduce the time from collapse to defibrillation and has shown to greatly improve survival rates.

The Chain of Survival

A chain of survival is in the worldwide guidelines for response to sudden cardiac arrest. Quick action by the first person on-scene can truly make a difference in saving a life. The chain of survival concept represents the sequence of four events that must occur quickly to optimize a person's chance of surviving a cardiac arrest.

The four links of the chain are:

- **Early Access** - Dial immediately
- **Early CPR** - Provide CPR to help maintain blood flow to the brain and organs until the arrival of the defibrillator and advanced care
- **Early Defibrillation** - Defibrillation is the only way to restart a heart in cardiac arrest
- **Early Advanced Cardiac Life Support** - After defibrillation an emergency team provides advanced cardiac care on scene such as intravenous medicine

Are there treatments for patients who survive SCA?

Patients who survive SCA or who are diagnosed as being a risk of SCA can be treated in a number of ways.

Many will be implanted with an ICD, a device like a pacemaker which is placed beneath the skin (usually on the upper chest wall) and has wires connecting it to the heart. Like an AED, this device constantly monitors the heart and will deliver shocks to defibrillate the heart if needed. Being fully implanted and completely automatic, the patient is able to lead a normal life with few limitations, safe in the knowledge that the ICD will respond immediately if they develop VF.

Some patients may only need to take medication alone or in addition to an ICD; occasionally some causes of SCA (such as WPW) can be treated by a curative procedure where the additional wiring is destroyed by a small burn inside the heart using a special catheter threaded through the circulation.

All patients who have survived SCA should be reviewed by a cardiac Electrophysiologist (a specialist in heart rhythm disturbances) in order to determine how best to prevent further events and also to consider whether family members need to be screened.