

# What can I do about sudden cardiac arrest?



Promoting better understanding, diagnosis, treatment and quality of life for those affected by heart rhythm disorders (cardiac arrhythmias)

# Glossary

**AED** Automated external defibrillator; a portable device used to shock the heart if it is needed

**BLS** Basic Life Support

**CPR** Cardiopulmonary Resuscitation; a temporary measure used to continue a minimal supply of oxygen to the brain and other organs

**Defibrillation** The re-establishment of the heartbeat

**SCA** Sudden cardiac arrest; when the heart stops beating suddenly and unexpectedly without warning

**VF** Ventricular fibrillation; a dangerously fast heart rhythm which causes the heart to stop pumping blood effectively. This rhythm needs a shock to stop it and return the heart back to a normal rhythm. Sudden cardiac arrest can soon follow if the rhythm is not treated quickly with a shock

**VT** Ventricular tachycardia; a fast heart rhythm which can cause collapse or degenerate into VF

**ICD** Implantable cardioverter defibrillator; a device which works like an AED, but is small enough to be implanted in a patient to allow automatic defibrillation at any time

**SVT** Supraventricular tachycardia; a fast rhythm that starts in the upper chambers of the heart; less commonly associated with SCA

**WPW** Wolff-Parkinson-White syndrome; a cause of fast heart rhythms

## Contents

### Glossary

What is sudden cardiac arrest (SCA)?

Who can be affected by SCA?

Is SCA the same as a heart attack?

How is SCA treated?

What is CPR?

What is an automated external defibrillator (AED)?

Using an AED is as simple as 1 2 3

The Chain of Survival

Mini-Anne CPR & AED training kit

Are there treatments for patients who survive a SCA?

Useful websites



# What is sudden cardiac arrest (SCA)?

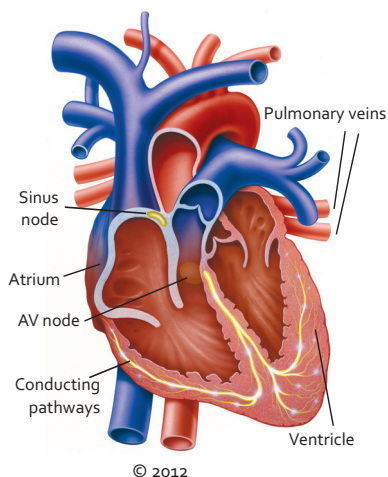
Sudden cardiac arrest (SCA) is a condition in which the heart stops beating suddenly and unexpectedly due to a malfunction in the heart's electrical system. The malfunction that causes SCA is a life-threatening abnormal rhythm; an arrhythmia. The most common arrhythmia is ventricular fibrillation (VF).

When in VF, the heart's 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, a sudden cardiac arrest may occur.

During SCA a victim 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 can succumb to it and most do not survive.

## The heart and normal conduction



## Important information

This booklet is intended for use by people who wish to learn more about sudden cardiac arrest. The information within this booklet comes from research and patients' experiences. The booklet offers an explanation of sudden cardiac arrest and how it is treated. Additional information can be sourced at the websites provided. Arrhythmia Alliance is leading a national campaign to place AEDs in local communities. For more information about HEARTS & GOALS™ please e-mail: [info@heartrhythmcharity.org.uk](mailto:info@heartrhythmcharity.org.uk) or visit [www.heartsandgoals.org](http://www.heartsandgoals.org)

# Who can be affected by SCA?

Unfortunately, anyone can suffer a 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 a previous heart attack or heart failure) are inherited or congenital arrhythmias; these include Wolff-Parkinson-White syndrome, Long QT syndrome and Brugada syndrome.

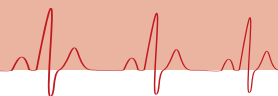
## Wolff-Parkinson-White syndrome (WPW)

WPW 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 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 into VF. The diagnosis is usually obvious from an Electrocardiogram (ECG), although sometimes the characteristic appearances are not evident and may require additional testing to diagnose. However, many patients with WPW have few or no problems throughout their lives.

## Sudden cardiac arrest facts

- It strikes without warning; killing 250 people a day in the UK
- In the UK, less than 5% of victims survive out of hospital
- It kills more people than lung cancer, breast cancer and AIDS combined
- It can happen to anyone, even young athletes
- Together with CPR, defibrillation is the only way to re-establish the heart's natural rhythm



## Long QT syndrome

Long QT is a syndrome which can cause a disturbance in the electrical system of the heart. This can predispose a person to ventricular tachycardia (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). In the presence of Long QT 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 variable. The diagnosis is apparent from an ECG, which should also be offered to relatives of a patient shown to have Long QT syndrome.



## Brugada syndrome

Brugada syndrome is a rare inherited tendency to SCA which relates to the functioning of the heart muscle cells. It most commonly presents in people in their thirties and has a tendency to cluster in certain countries. It can usually be diagnosed from an ECG but additional tests may be required.

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, heart failure or other known heart problems

SCA is usually caused by VT and/or VF starting in scars or damaged areas of the heart muscle, or very occasionally due to the effects of medication that the patient may be taking.

## Is sudden cardiac arrest the same as a heart attack?

SCA is not the same 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 together with CPR is the only way to re-establish the hearts natural rhythm.

Cardiopulmonary resuscitation (CPR) alone will not restart a heart following a sudden cardiac arrest.

**No bystander intervention = 5% survival**  
**CPR alone = 9% survival**  
**CPR + early defibrillation = 50% survival**

## HEART ATTACK

Caused by a blockage in an artery that supplies blood to the heart.

The affected heart muscle then begins to die due to lack of oxygen.

Symptoms include central 'crushing' chest pain, often radiating to arms and jaw.

The patient usually remains awake and alert.

## SUDDEN CARDIAC ARREST

Caused by an abnormal heart rhythm, usually ventricular fibrillation.

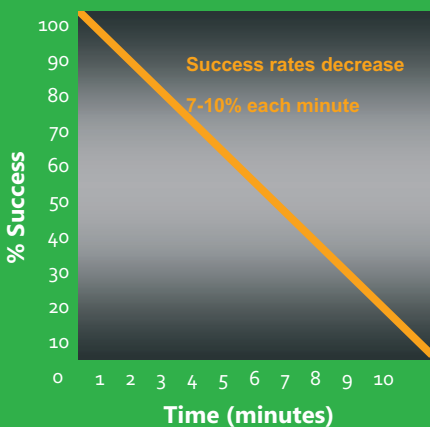
There is rarely a warning and the patient always loses consciousness.

## What is CPR?

CPR is a temporary measure used to continue a minimal supply of oxygen to the brain and other organs.

CPR is otherwise known as Basic Life Support (BLS) and guidelines are available for out-of-hospital adults, children, and newborns. The 'Resuscitation Guidelines 2010' are published by the Resuscitation Council (UK) and are available at [www.resus.org.uk](http://www.resus.org.uk)

### Early defibrillation is the key to surviving SCA



- Survival rates drop 7 - 10 percent every minute without defibrillation<sup>1</sup>.
- CPR is a temporary measure that maintains blood flow and oxygen to the brain. It will not return the heart to a normal rhythm. Only defibrillation can return a heart to a normal rhythm.
- Quick action by the first person on the scene can truly make a difference in saving a life.
- Automated external defibrillators make early defibrillation readily available and are easy to use, even for lay people with minimal training.

1. Cummins, R.O. 1989. From concept to standard-of-care? Review of the clinical experience with automated external defibrillators. *Annals of Emergency Medicine* 18: 1269-75

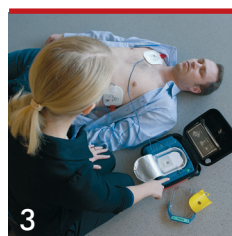
## What is an automated external defibrillator (AED)?

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

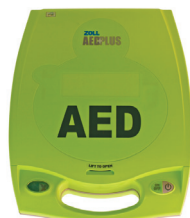
Who can use an AED? ...Anyone!...  
...Minimal training...No medical background!...

Putting AEDs in the community; offices, shops, public places, home, etc. can dramatically reduce the time from collapse to defibrillation and has been shown to greatly improve survival rates.

## Using an AED is as simple as . . .

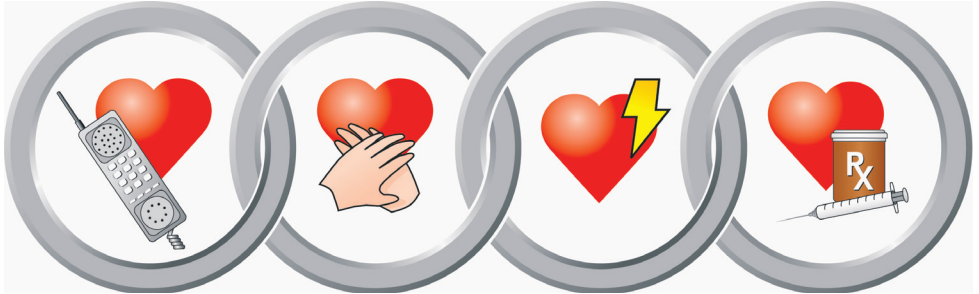


Anyone can use an AED, no training is needed.





## The Chain of Survival



Worldwide guidelines for response to sudden cardiac arrest include 'The Chain of Survival'. Quick action by the first person on-scene can truly make a difference in saving a life.

The Chain of Survival represents the sequence of four events that must occur quickly to optimise a person's chance of surviving a cardiac arrest.

### The four links of the chain are:

- **Early access** - Dial 999 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 re-establish the heart's natural rhythm following a sudden cardiac arrest.
- **Early advanced cardiac life support** - after defibrillation. An emergency team provides advanced cardiac care on scene, such as intravenous medicine.

## Mini-Anne CPR & AED training kit

Arrhythmia Alliance is proud to introduce the 'Mini-Anne Self Directed CPR & AED Skills Learning Programme'.

With a fully interactive DVD, the self-directed Mini-Anne CPR & AED Kit allows individuals to learn the core skills of cardiopulmonary resuscitation (CPR) and the use of an automated external defibrillator (AED) in less than an hour.

The kit includes the complete set of apparatus needed to simulate the process of performing CPR and using an AED; from identifying a patient in need of medical assistance to the arrival of the emergency services.

The interactive DVD is a revolutionary method of teaching these life-saving skills. It employs a unique "watch and do" technique where the user can practice CPR (30 compressions: 2 breaths) on a personal manikin (Mini-Anne) and learn how to use an AED.

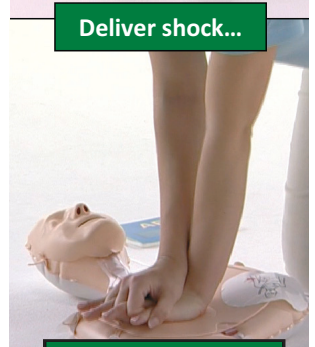
For more information, or to order your own Mini-Anne CPR & AED Kit(s), please contact a member of the Arrhythmia Alliance team.



STAND CLEAR...



Deliver shock...



Continue CPR...

## Are there treatments for patients who survive a SCA?

Patients who survive a SCA or who are diagnosed as being at risk of SCA can be treated in a number of ways. Many will be implanted with an implantable cardioverter defibrillator (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. This device constantly monitors the heart and will deliver a shock 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 required (see the A-A leaflet on ICD/CRT Patient Information). 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 whereby the additional wiring is destroyed by a small burn inside the heart, using a technique known as catheter ablation (see the A-A leaflet on catheter ablation).

All patients who have survived a 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 to consider whether family members need to be screened.

## Useful websites

A list of useful sites can be found at:- [www.heartrhythmcharity.org.uk](http://www.heartrhythmcharity.org.uk)  
This list is not exhaustive and it is constantly evolving. If we have excluded anyone, please accept our sincerest apologies and be assured that as soon as the matter is brought to the attention of the Arrhythmia Alliance, we will quickly act to ensure maximum inclusiveness in our endeavours.

If you wish to contact us direct please phone on +44 (0) 1789 450 787 or email: [info@heartrhythmcharity.org.uk](mailto:info@heartrhythmcharity.org.uk)

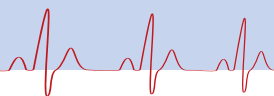
Promoting better understanding, diagnosis, treatment and quality of life for those affected by heart rhythm disorders (cardiac arrhythmias)

PO Box 3697  
Stratford upon Avon  
Warwickshire  
CV37 8YL

+44 (0)1789 450 787  
@ info@heartrhythmcharity.org.uk  
www.heartrhythmcharity.org.uk

Registered Charity  
No. 1107496

© A-A Published April 2005,  
Reviewed September 2013,  
Planned Review Date



**Acknowledgements:** Arrhythmia Alliance would like to thank all those who helped in the development of this publication.

**President:**

Prof. A John Camm

**Patrons:**

Prof. Hein J J Wellens  
Prof. Silvia G Priori  
Mr W B Beaumont OBE  
Rt. Hon Tony Blair

**Trustees:**

Mr Mark Bullock  
Mr Nigel Farrell  
Dr Adam Fitzpatrick  
Prof. Richard Schilling

**Founder & Trustee:**

Mrs Trudie Lobban MBE

If you would like further information or would like to provide feedback please contact Arrhythmia Alliance. Please remember that this publication provides general information only. Individuals should always discuss their own condition with a healthcare professional.