# Cognitive problems

## after a Sudden Cardiac Arrest

Sudden Cardiac Arrest UK

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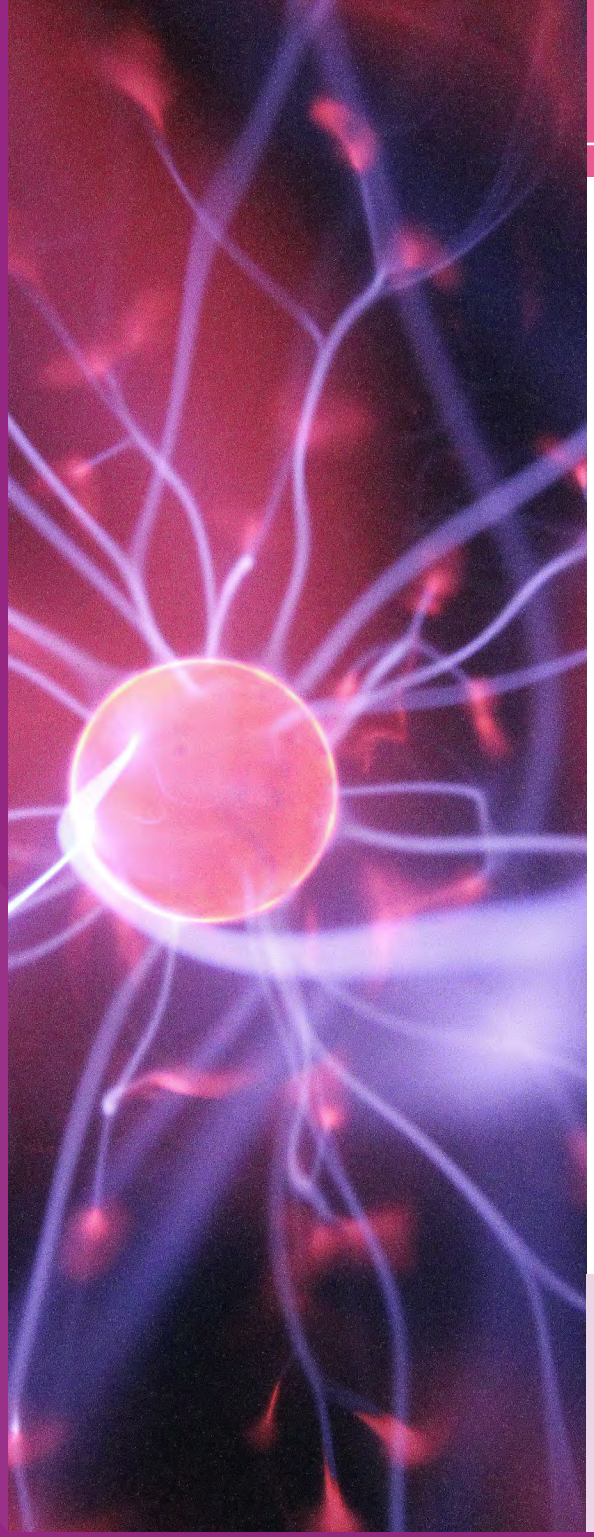


## 1 INTRODUCTION

**A cardiac arrest is a sudden failure of the heart to pump effectively, which causes the affected person to lose consciousness and requires immediate intervention via cardiopulmonary resuscitation (CPR). Although there are different reasons why someone might have a cardiac arrest – including severe trauma or choking – the most common reason is a problem with the heart, such as the advanced stages of a heart attack, or other conditions causing an abnormal heart rhythm.**

During a cardiac arrest, the blood stops flowing through the body. Loss of consciousness is the result of blood, oxygen and other nutrients not reaching the brain; without prompt intervention, this will lead to irreversible damage within a few minutes. Performing CPR helps to keep some blood flowing through the body and reach the brain and other organs; this 'buys' time and allows the use of a defibrillator to 'shock' the heart back into a normal rhythm.

After a person has been 'shocked' and their heart has been restarted, they may not regain consciousness straight away and if they do, they might be confused and still require urgent medical attention. After a cardiac arrest, the patient will need to be taken to hospital and often to intensive care too. The cause of the cardiac arrest will need to be investigated and treated, and recovery will need to be carefully monitored. Most people suffering a cardiac arrest will spend some time in a coma. During this time they will need help with breathing and feeding and will be looked after by a skilled team of nurses and doctors, but they will have no awareness of this. At this stage it is still unclear if they will survive or not; for some, the damage caused by the lack of oxygen to the brain (hypoxia) might just be too severe.

Sudden Cardiac Arrest UK provides peer support and resources for survivors and those affected by the survivor's event. Dr Michael Smith, Consultant Cardiologist Dr Thomas Keeble, Clinical Psychologist Dr Marco Mion and survivor Paul Swindell have created a series of resources to help survivors and their loved ones understand more about a cardiac arrest and its repercussions.

## Delirium

Those that survive and awake from the coma may initially be very confused. They may forget conversations soon after having them, repeat themselves regularly, and something mix up or not recognize family members. They will also be disorientated and very unaware of what has happened to them. This is common after a critical illness and is often due to delirium and is not necessarily a sign of brain damage. These survivors will often show very little concern around what has happened to them, often in stark contrast with the concern of family and friends who have lived through the whole experience.

For many survivors this initial confusion will improve and mostly resolve within a few days; at some point during their hospital admission, they will start remembering events more consistently – for instance, conversations with nurses, consultants and family/friends that took place in previous days, etc. However, this might still be 'hit and miss' initially and might still not be 'back to normal' at the time of discharge from the hospital.

## Memory loss

Most survivors will not remember the moments immediately before their cardiac arrest. Some may retain memories of the hours to minutes before they collapsed, but others will have lost many days or even weeks before their event. Many of these memories will not come back because the brain did not have enough time to 'store' them before the person became unconscious; this is a normal, physiological process, and affects all cardiac arrest survivors to some extent, whether they have had a brain injury or not.

## Cognitive impairment

If the confusion is severe and persists for many days with little change, further tests may be performed, including blood tests, cognitive testing and a scan of the brain (CT or MRI), to see if any damage has occurred. Sometimes doctors do not see any brain damage on the brain scans, but if the cognitive problems persist this could still be suspected.

Occasionally some survivors may present with mild confusion and a slight decline compared to their functioning before the cardiac arrest, which may be evident to family members, but not always obvious to the treating team at the hospital. It is perfectly fine to discuss any concerns about this with the hospital team; the chances are that these problems are mild and transient, but if appropriate an occupational therapist may be involved to investigate them more in detail.

When survivors suffer a brain injury this can present in different ways, including cognitive and sometimes physical difficulties. The most common cognitive skills affected are memory, attention, and what is known as 'executive functioning' – that is, a set of skills that help you get things done by planning and organising. Cardiac arrest survivors may also be unaware of their difficulties or severely underestimate them. These difficulties are similar to those caused by delirium, but usually do not improve quickly and do not recover completely. It may be difficult for doctors and therapists in the early stage of recovery to say if confusion and poor memory are due to delirium or to brain injury.

Some survivors may also present with specific problems, in particular, if they also suffered a stroke at the same time of their cardiac arrest. They could have problems with vision, speech, or with moving/feeling a part of their body. All these problems will be investigated by the hospital team and will likely require a period of rehabilitation.

**Delirium** – this is a worsening change in a person's mental state, also described as an acute confusional state, which manifests with difficulties in understanding, memory and changes in personality. Whilst some people with delirium may be agitated and restless, others may become unusually sleepy.

**Cognition** – this refers to a combination of processes in the brain, including memory, language, thinking and the ability to learn new skills etc. Tests may be undertaken to determine if there are problems with these cognitive functions.

**Hypoxic** – deprived of oxygen.

# 3 RECOVERY: going home

**Leaving a hospital can both be comforting and anxiety-provoking. Most survivors can be discharged home, usually within a few days or weeks after being admitted to the hospital for their cardiac arrest. Circumstances will be different for everyone, but important factors can include their age, physical recovery, family, employment status and medical treatment received.**

For many survivors, some cognitive problems can linger into the days or weeks after discharge from the hospital. Commonly, they do not remember much about their hospital admission, in particular the first few days, and this can be upsetting. Some also find that they may 'go blank' when they are talking, forgetting simple words or 'losing the thread' of the conversation - although this often comes back with time. Survivors may also struggle to focus and pay attention, and mental/physical fatigue can affect the number of things they can do during the day, and for how long they can do them. It is also worth remembering that some survivors experience a period of anxiety/low mood after discharge, and this can also affect memory.

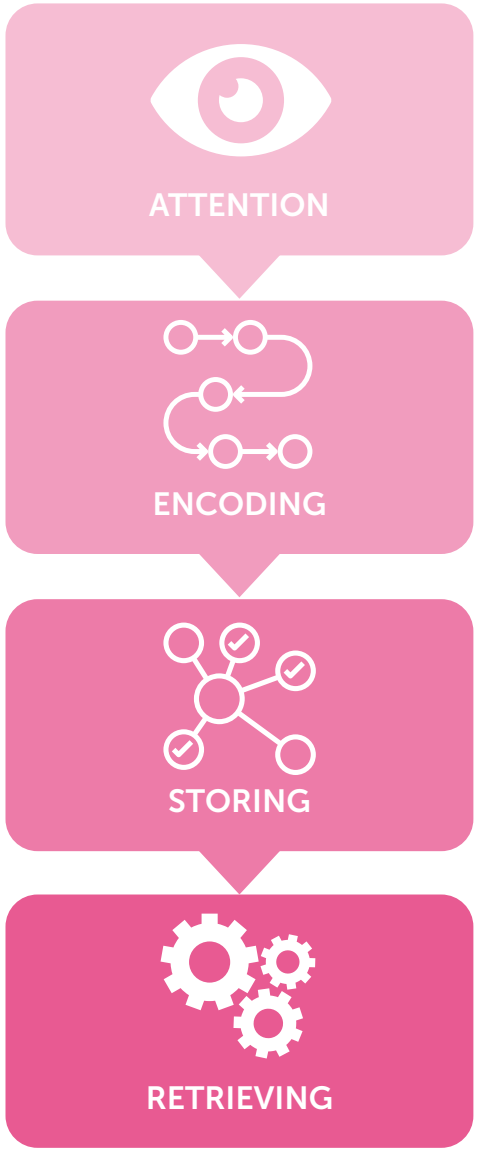
Very often these difficulties improve markedly in the first few weeks after discharge. However, around half of survivors will still experience some mild problems with their thinking skills around 6 months after their cardiac arrest. These are usually described as 'frustrating' rather than 'life-changing' and often consist of forgetting bits of conversations, lists of things for instance, a shopping list or names of people, alongside difficulties with managing multiple things at the same time ('multi-tasking'). These difficulties are not expected to get any worse. However, they can become more noticeable when returning to demanding activities like work. For many survivors it might be advisable to postpone important decisions for at least a few weeks after being discharged from the hospital, to make sure they focus on their recovery first.

Some survivors might have a more complex recovery. Once their cardiac problems have been addressed, they might be transferred from the cardiac ward to another more appropriate ward or another hospital altogether. Rehabilitation can be focussed both on physical recovery – if the survivor needs to relearn how to walk or look after themselves, and cognitive recovery – if a brain injury has occurred and they need help with cognitive strategies. The current provision of neurorehabilitation is quite patchy across the UK; many cardiac arrest survivors who have suffered a severe brain injury and have the potential to recover will be eligible for inpatient rehabilitation in specialist units, however, this may not be the case if the injury is not severe or not identified in the first place. Some survivors may be able to access hospital 'outpatients' appointments, whilst others may have community 'at home' rehabilitation, although this may depend on where they live. The hospital team or your GP should be able to advise on what rehabilitation options are available.

**A very common complaint after a sudden cardiac arrest is the difficulty in remembering things. To understand these problems, we first need to understand a bit about how memory works.**

There are many different types of memory. Most people remember their childhood school, their first car, their wedding day etc. We call this **long-term memory**, and by and large, this is very resistant to any brain injury, however, some cardiac arrest survivors with a difficult recovery might find that some of these memories are no longer easily 'accessible' or feel a bit vague and get mixed-up.

When we form new memories there are different processes at play. First of all, we need to **pay attention**; then we need to **learn** (or 'encode') the information, **store** it somewhere in our brains, and **recall/retrieve** it when we need it. The correct functioning of all these processes is what makes us able to remember a conversation, a shopping list, an appointment etc. This is what most people think of as **short-term memory**.




It is worth mentioning that no one's memory is perfect; some people may naturally be better at remembering conversations rather than images and songs or vice versa. Some people will benefit from using internal strategies, whilst others will need to rely on external reminders.

- **Internal strategies** – To get the best out of our memory, it is important to maximise attention by **reducing distractions** (that is, reduce all background noise, avoid time-pressure, and focus only on one thing). **Repeating** the same information several times will also help, especially if the repetitions are further and further spaced out in time (that is, you repeat it after one minute, then 5 minutes, then 10 minutes etc). You can also try and **'chunk'** items together (for instance, in a shopping list think of all the vegetables, all the drinks etc). Creating an image of what you need to remember – or **visualising** – can also be helpful.
- **External strategies** – For most people, internal strategies will be impractical or unreliable. In this case, external strategies will be more useful. These include daily **planners/calendars**; **whiteboard and post-it notes**; **smartphones/tablets**; **medication blister packs** and **dosette boxes**. In general, cardiac arrest survivors with memory difficulties will find it easier to use memory strategies they were already using before their event, although it is certainly possible to learn a new skill with patience and perseveration.

For more information on memory strategies please see our helpful links section.

Some survivors who suffered a brain injury may also find they experience additional difficulties, such as appearing 'unmotivated' and lacking energy and enthusiasm. Although this could be due to an episode of depression, it might also be an effect of the brain injury. Rarely, survivors can also experience problems with their vision, hearing or speech, depending on which part of the brain has been affected. If you think you are experiencing these problems please speak to your treating team in hospital, or your GP if you are back at home.

# 5 HELPING A LOVED ONE

**If your loved one has suffered a cardiac arrest, you may be wondering how you can help them get better and back to a normal life. At this stage, it may be unclear and scary as to what the future may hold.**

It is important to remember that life-threatening scenarios often affect the whole family in some way, you included. Perhaps even more so than the survivor, as you may have intervened in or witnessed the resuscitation. Please take time to read our other publications, resources and useful links and consider your own well-being as a priority.

After doing so, you might find some of these suggestions helpful:

- In the early stages, whilst in hospital, and especially if your loved one looks quite confused, speak slowly and allow time for them to respond.
- Allow them time to search for the words they want to say, but after a little bit offer a clue or a guess at the words so they do not become too frustrated.
- If they are confused about what happened or sharing confused thoughts, offer correct information gently – you may have to repeat this several times.
- If they are 'stuck' on a topic or thought, distract them with a new conversation.
- Consider keeping a diary of what is happening during their hospital admission. Some survivors appreciate reading it afterwards, to understand what has happened.

Most survivors will recover from this period of confusion very quickly and completely, in particular after being discharged home. Some survivors however may experience more long-term difficulties if they suffered a brain injury. Depending on their circumstances and difficulties, they may need some help with using the memory strategies suggested by therapists – this may include developing a daily routine, using calendars and other alert systems to remember tasks/appointments.

Developing a daily routine can also help with 'lack of initiation' (or feeling unmotivated). Breaking down a task into smaller steps and avoiding overstimulation can also help to maximise a survivor's skills and abilities. Be aware that there will be 'good days' and 'bad days' – inconsistency is common and very much part of the recovery process and will depend on many factors, some of which are beyond your control. Try to have a sense of 'calm acceptance' as much as you can – your loved one will likely be aware of that and it will benefit both of you!

Most importantly, do not be afraid to ask for help if you feel you are struggling (see useful links section).

# 6 SUPPORT

**The Sudden Cardiac Arrest UK website has a wealth of information on cardiac arrest and its after-effects, including common cognitive problems. Peer support communities can be invaluable for working through your experience and Sudden Cardiac Arrest UK runs several Facebook groups for both survivors and their families.**

If you or your loved one has been diagnosed with a brain injury as a result of their cardiac arrest, **Headway** and the **UK Acquired Brain Injury Forum (UKABIF)** provide lots of practical information around understanding a brain injury and finding out what support might be available for you and your family.

## Useful Links

### Information

suddencardiacarrestuk.org

scauk.org/publications

chainofsurvivaluk.org

lifeaftercardiacarrest.com

icusteps.org

headway.org.uk

ukabif.org.uk

cambridgememorymanual.com

### Facebook Peer Support Groups

For survivors and their families
SuddenCardiacArrestUK

For anyone who has participated in or witnessed a resuscitation
ChainOfSurvivalUK

### Psychological Help

scauk.org/counselling

nhs.uk/mental-health

mind.org.uk

info@SuddenCardiacArrestUK.org

@WeAreSCAUK

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