

# Subarachnoid Haemorrhage



Brain & Spine  
Foundation

A guide for patients and carers

The **Brain & Spine Foundation** provides expert information and support for anyone affected by neurological problems.

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Our publications are designed as guides for anyone affected by a neurological problem, including family, friends, and carers.

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## About this booklet

This booklet provides information on subarachnoid haemorrhage (SAH), with a particular focus on spontaneous, aneurysmal SAH. It covers the acute stage of SAH, describes the condition, and gives an overview of what happens in hospital, tests and investigations, and possible treatments. This booklet also provides information on recovery from SAH, common symptoms and feelings, and returning to everyday life.

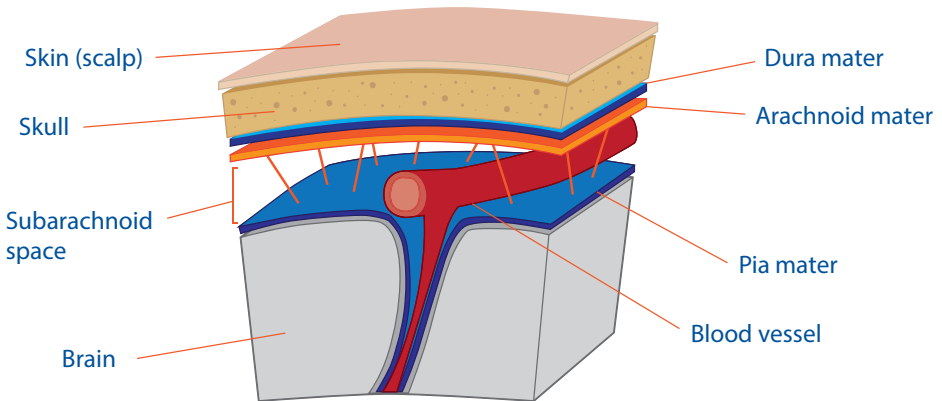
Sources of further support and information and details on requesting references can be found at the back of this booklet.

# Common questions

## What is a subarachnoid haemorrhage (SAH)?

A subarachnoid haemorrhage (SAH) is a sudden leak of blood over the surface of the brain. SAH is a medical emergency and is a serious, life-threatening condition.

The brain is covered by three layers of membrane. The middle layer is called the arachnoid mater. The blood vessels supplying blood to the brain lie in a space beneath this layer, and are surrounded by clear cerebrospinal fluid (CSF). An SAH occurs when there is a leak of blood (haemorrhage) within this space underneath (sub-) the arachnoid layer.



This sudden leak of blood can increase the pressure within the skull (intracranial pressure) and damage the surrounding area of the brain. Blood in this space will also cause the membrane layers surrounding the brain to become inflamed.

An SAH can cause problems with the flow of CSF around the brain, sometimes leading to a condition called hydrocephalus (see page 26).

## What can cause an SAH?

Brain aneurysms that have ruptured (burst) are the most common cause of spontaneous bleeding in SAH.

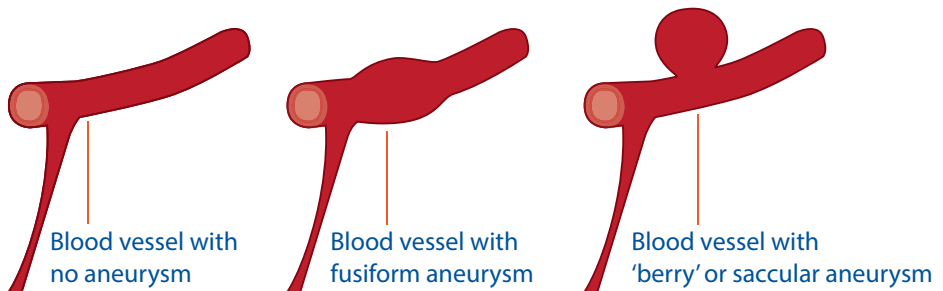
Other causes of an SAH include traumatic injuries to the head, and ruptured arteriovenous malformations (AVMs). An AVM is an abnormal knot of blood vessels.

In some people the source of the bleeding cannot be found, and so the cause is unknown.

## What is an aneurysm?

In many cases of SAH, an aneurysm will have developed along one of the blood vessels supplying blood to the brain.

An aneurysm is a bulge in a blood vessel caused by a weakness in the blood vessel wall. As blood passes through the weakened blood vessel, the pressure of the blood causes a small area of the wall to bulge outwards.



A haemorrhage can occur when the weakened wall of the aneurysm ruptures due to the pressure of the blood. When this happens, blood escapes into the surrounding subarachnoid space, which is filled with CSF.

## Why do aneurysms develop?

We do not fully understand why aneurysms develop in the brain. In most cases, there is no way of identifying the people who are at risk of developing an aneurysm. Aneurysms can occur in people without known risk factors.

It is difficult to estimate how many people in the general population are affected by a brain aneurysm, as brain aneurysms that haven't ruptured usually cause no symptoms and therefore can go undetected.

Some studies suggest that more women are affected than men, and that brain aneurysms are also more common in people aged over 40.

Other factors that increase the risk of developing an aneurysm include:

- high blood pressure
- smoking
- excessive alcohol consumption

A very small number of people can inherit a greater risk of having an aneurysm from their family, but this increase in risk is small.

Although this booklet only describes aneurysms in the brain, they can also occur in blood vessels in other parts of the body - but there is no link between these aneurysms and brain aneurysms. There is also no established link between aneurysms and stress.

## Could I have known I had an aneurysm?

In a very small number of people, an aneurysm can press on a particular part of the brain and symptoms might develop as a result. However, aneurysms usually go undetected and there are no symptoms until they rupture.

## Why did the SAH happen now?

People of any age can be affected by an SAH, but it is more common in people between the ages of 40 and 60. Factors that increase a person's risk of SAH are thought to be the same as the risk factors for developing an aneurysm.

There is no reason why the haemorrhage occurs on one day rather than another. The bleed often, though not always, happens at a time of physical effort like coughing, going to the toilet, heavy lifting, straining, or during sex.

Other factors that are thought to influence the risk of an aneurysm rupturing are to do with the size of the aneurysm and where in the brain it is located.

## Will it happen again?

Once you have received treatment and are recovered, you should have a normal life expectancy and it is unlikely that you will have another SAH.

## Are my family at risk?

In some families there may be a slightly increased risk. If more than one person in the family has had an SAH from an aneurysm, or is known to have an unruptured brain aneurysm, then you should discuss this with your specialist. Some members of your close family (parents, brothers, and sisters) may be advised to have an MRA scan (see page 10) to check for possible aneurysms.

## What are the symptoms of an SAH?

Most people have a sudden, severe headache, often at the back of the head. Some people may also be sick (vomit) or pass out. The headache usually persists and people tend to describe it as the worst headache they have ever had. This kind of headache is sometimes referred to as a 'thunderclap headache' because of the way it starts very suddenly and intensely.

A stiff neck may develop within a few hours of the headache. People might also slur their speech, experience visual problems or have sensitivity to light. Physical problems like weakness in an arm or leg may also be present. In more severe cases, people can collapse and lose consciousness. Some people might also have a seizure, sometimes known as a "fit".

### Symptoms:

- Sudden, severe headache
- Feeling sick (nausea) and being sick (vomiting)
- Stiff neck
- Slurred speech
- Visual problems
- Physical problems
- Loss of consciousness
- Seizure/fit
- Sensitivity to light
- Confusion
- Weakness on one side of the body



## What happens in hospital?

Most people are admitted to their local hospital where the haemorrhage is confirmed by a CT scan (see page 8) of the brain. You might also have a sample of fluid taken from your spine (lumbar puncture) to help confirm the diagnosis (see page 9).

You will then usually be admitted to a regional centre and seen by a neurosurgeon who has particular expertise in treating SAHs. You will be admitted for further investigations (see pages 8-10) which could include another CT scan, a CTA scan, an angiogram, an MRI scan, or an MRA scan.

Health professionals may describe an SAH using terms that refer to:

- the source of the bleed (**aneurysmal** or **non-aneurysmal**), and
- how it occurred (**spontaneous** or **traumatic**)

**Aneurysmal** refers to an SAH that results from rupture of an aneurysm.

**Non-aneurysmal** refers to an SAH that is due to other causes, or an SAH in which no cause can be identified.

An SAH can be either **spontaneous**, occurring suddenly and without warning; or **traumatic**, when the SAH follows an injury or trauma to the head.

The information in this booklet focuses on spontaneous, aneurysmal SAH.

# Tests and investigations

A CT scan is usually the first investigation you will have if it is suspected that you have an SAH.

Depending on the results of the CT scan, you may need further tests to confirm the diagnosis of SAH. These might include a lumbar puncture, further specialised CT scans, a cerebral angiogram, or MRI scans.

Once the diagnosis of SAH has been confirmed, other tests and investigations may still be done to help make decisions about how best to treat you.

## CT scan

CT stands for computerised tomography. This is a special type of X-ray which uses a computer programme to produce detailed three-dimensional (3D) images of the body, including the brain.

During the CT scan you will lie on a flat bed which moves through the middle of the scanner. The scanner rotates around your head to produce the 3D images. It is a quick and painless examination.



A CT scan can help to confirm the diagnosis of an SAH and can show the location of the haemorrhage, as well as other problems it might be causing.

## CTA scan

CTA stands for computerised tomography angiography. This is a special type of CT scan that involves the use of a dye (contrast). The dye is usually injected into a vein in the arm and this helps to highlight blood vessels, making them more visible on the scan. CTA can help to identify an SAH or an aneurysm that may not have been seen on a standard CT scan.

## Cerebral angiogram

A cerebral angiogram is another test that uses X-rays and a dye to show the blood vessels in your head and neck. A cerebral angiogram can sometimes detect aneurysms that cannot be seen on a standard CT scan or a CTA scan.

During a cerebral angiogram, a local anaesthetic is used to numb the groin area before a thin, flexible tube (catheter) is inserted into a blood vessel called the femoral artery. The catheter is passed gently through other blood vessels in your body until it reaches your neck. You will not feel it moving inside you. The catheter is then positioned into different blood vessels in the neck, guided by X-ray 'cameras'. The dye is injected into these blood vessels through the catheter, and the X-ray cameras capture images of the dye moving through blood vessels in your brain.

The injections of dye can cause temporary side-effects which include: a warm feeling or hot-flush, buzzing or whooshing noises, flashing lights, or a strange taste in your mouth. These are normal and pass quickly.

## Lumbar puncture

A lumbar puncture may be done to help confirm the diagnosis of an SAH. It is used to take a sample of cerebrospinal fluid (CSF) that can be tested for signs of blood. CSF is a clear liquid that surrounds the brain and spinal cord, and fills the subarachnoid space.

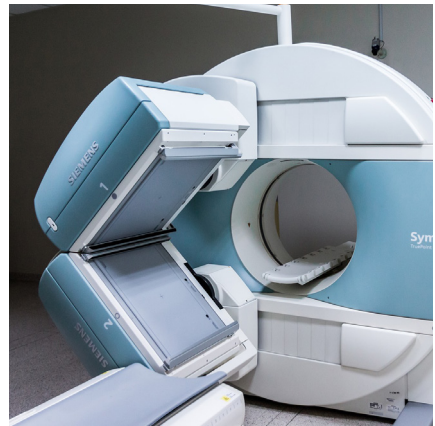
To take the sample, a needle is passed between two vertebrae (spinal bones) at the lower end of the spine (the lumbar area). The needle goes into the space containing CSF, below the level where the spinal cord ends. A small amount of CSF is drawn off in a syringe and sent to a laboratory for testing.



For more information you may be interested in reading our fact sheet on lumbar puncture.

### MRI and MRA scans

MRI stands for magnetic resonance imaging. This is a type of scan that uses magnetic fields and radio waves (instead of X-rays) to produce 3D images of the body, including the brain. MRI scans produce a different image to X-ray based scans, such as a CT scan, and can provide more information about your condition.



During an MRI scan you will lie on a flat bed which moves through the middle of the scanner. The length of the scan can vary and it can be noisy, so you may be given ear plugs or headphones to wear.

MRA stands for magnetic resonance angiography. This is a particular form of MRI scan that highlights blood vessels in the images produced, and can be performed with or without the use of a special dye. MRA may be included with an MRI scan.

# Treatments for SAH

The aim of treatment for an SAH is to stabilise your condition and to prevent any further bleeding from the aneurysm.

When you are first admitted to hospital you may be given medication to help manage your symptoms and stabilise your condition. You will need to remain in bed whilst you are having tests and you will be closely monitored.

After a diagnosis of SAH has been confirmed, your blood pressure will continue to be monitored and you will be given a drug called Nimodipine to help prevent further complications.

## **What if no abnormality is found?**

In a few cases, no aneurysm is found and this is often referred to as idiopathic (no known cause), non-aneurysmal, or negative angiogram SAH.

Treatment will focus on managing your symptoms and recovery. This is sometimes referred to as 'conservative management.'

You might like to read the sections on 'Going Home' and 'Recovery' on pages 27 and 29.

## Treating the aneurysm

There are different possible treatments for preventing re-bleeding from an aneurysm.

The chosen method will be the one most suitable for your particular situation and will depend on a number of factors, including the size and position of the aneurysm.

The decision about which particular method should be used is made by a neurosurgeon, an interventional neuroradiologist (a specialist radiologist who treats aneurysms in the brain via the blood vessels), and other members of your healthcare team, in discussion with you and your family.

### What are the different ways of treating an aneurysm?

- Clipping (see page 19) is a form of **neurosurgery**. It is performed by a neurosurgeon, who makes an opening in the skull (craniotomy) to access and treat the aneurysm.
- Coiling, stenting and the use of WEB devices (see pages 14-18) involve treating the aneurysm from inside the blood vessel. These forms of treatment are sometimes referred to as **endovascular surgery** or **interventional neuroradiology** and are performed by an interventional neuroradiologist. By going via the arteries that run from the groin into the brain, these treatments avoid the need to open the skull. The particular method used will depend on the location, the size and the shape of the aneurysm.

Due to the individual nature of SAHs, it might be that your healthcare team decide not to go ahead with aneurysm treatments such as coiling, stenting or clipping. Treatment will be advised if it is felt to be the most beneficial course of management. The decision to go ahead with a treatment is made when the

benefits are believed to outweigh any possible risks. Sometimes treatment is delayed a number of days to reduce the risk of complications.

### What are the risks?

It is likely that the benefits of your treatment will strongly outweigh any possible risks, and your doctor will have discussed this with you fully before you give your consent to go ahead with the treatment.

There are certain risks when treating an aneurysm. Possible complications from the treatment may include stroke-like symptoms such as weakness or numbness in an arm or leg, and speech or visual problems.

As with any surgery, there is a risk of bleeding and infection. In endovascular treatments there may also be damage to the artery at the entry site in the groin.

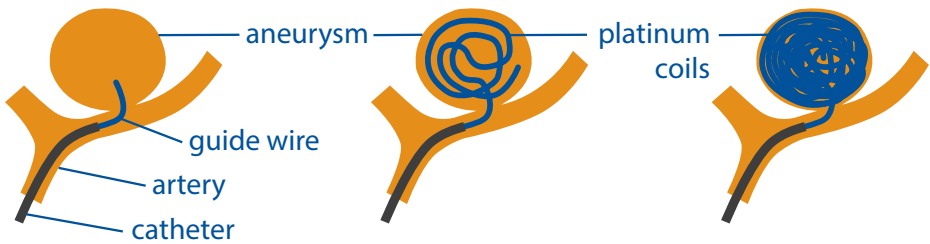
### Why is another patient having different treatment to me?

Every person is affected differently, as an SAH can affect different areas of the brain and differ in severity. Treatments vary for each individual person, as does their recovery.

## Coiling

Coiling involves treating the aneurysm from inside the blood vessel with small metal coils made from platinum. They are inserted into the aneurysm using a fine plastic tube called a catheter. The coils are twice the width of a human hair, and can vary in length.

The largest coil is inserted first and then smaller coils are inserted until the aneurysm is filled. The number of coils needed depends on the size of the aneurysm, but usually several coils will be used.



The coils remain in the aneurysm - they are not removed. They prevent blood flowing into the aneurysm and therefore reduce the risk of a bleed or re-bleed. Blood then clots around the coils sealing off the weakened area.

### Can the coils move?

Once the coils are securely in place they will not move out of the aneurysm into the artery, but in some cases the coils can settle further within the aneurysm.

This might mean that more coils, or further treatment, are required to completely fill or treat the aneurysm. This is why you will have a follow-up MRA scan. Around one in every 10 patients will require further treatment.

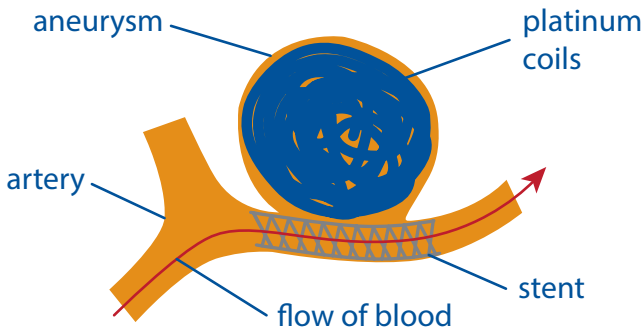


## Stenting

A stent is an expandable mesh tube made from metal. Stents can be inserted within a blood vessel to support the surrounding walls. Due to the tube-like shape of a stent, blood is able to pass through the centre of the stent and continue flowing through the blood vessel.

There are different types of stents and different ways in which a stent may be used to treat an aneurysm.

Sometimes a stent may be put into an artery and used to hold the coils in place inside the aneurysm. This is called stent-assisted coiling. It is more likely to be done if the aneurysm has a very wide 'neck' (where the aneurysm meets the artery) that could otherwise allow the coils to escape.



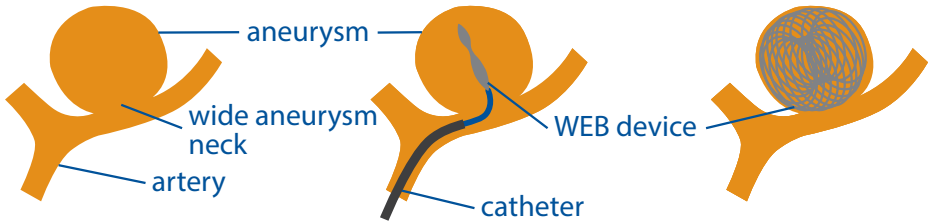
Flow-diverting stents, such as a Pipeline Embolisation Device (PED), can be used to treat aneurysms by diverting the flow of blood away from the aneurysm itself. These kinds of stent are more often used to treat unruptured aneurysms and are rarely used in cases of SAH to treat ruptured aneurysms.

If a stent is used, you may have to start taking antiplatelet (blood thinning) medication. You should not stop taking this medication, unless your doctor tells you otherwise.

## WEB devices

Another method for treating aneurysms that have a wide neck, is to use a device called a Woven Endobridge (WEB).

Similar to a stent, a WEB is a device made from metal mesh; but unlike a stent the WEB device is inserted in to the aneurysm itself rather than in to the artery. The WEB device expands to fill the aneurysm and this reduces blood flow in to the aneurysm. Blood then clots around the mesh sealing off the weakened area.



WEB devices are relatively new and research is still being done to see how they compare to other forms of treatment for SAH and in what situations they work best.

## What to expect with endovascular treatments

Although the device used to treat an aneurysm differs between coiling, stenting and the use of a WEB, much of the procedure for these kinds of treatments is the same.

## What happens before the procedure?

All endovascular treatments used to treat an SAH involve a catheter being fed up to the brain via an artery in your groin. Before the procedure, an area of skin in the groin will be cleaned and shaved.

The procedure will be performed by an interventional neuroradiologist and is carried out under general anaesthetic in the radiology department. You will be asleep throughout. This means you must not eat or drink anything for four to six hours before the procedure. The staff on the ward will advise you on this.

## What happens during the procedure?

The room you are treated in will have several large pieces of high-technology imaging equipment. These are needed to perform the treatment you are having. Treating an aneurysm is a complex and delicate procedure that will take at least three hours, and often longer.

The neuroradiologist will begin by making a small incision (cut) in your groin through which they will insert the catheter into your femoral artery. This is then guided through other blood vessels in your body using the imaging equipment, until it reaches the aneurysm in your brain.

The neuroradiologist will then insert the device that is being used, such as the coils or the WEB device, to treat your aneurysm. Once the device or devices have been put in place, they will remove the catheter. Occasionally, the entry point in the groin will need to be sealed or stitched.

## What happens after the procedure?

You will spend some time in the recovery unit after the procedure and then be transferred to a ward or high dependency unit.

During your time in the recovery unit, regular neurological observations will be performed by the nursing staff. This is to check that you are waking up properly from the anaesthetic. It involves asking you simple questions, testing the strength of your arms and legs, and shining a light in your eyes. Your blood pressure, heart rate, respiratory rate, and oxygen levels will also be monitored.

You may have some discomfort and bruising around the small wound in your groin. The nurse will check your wound for any bleeding and also check the pulse in your foot. This is to ensure that the blood circulating to your leg has not been affected. It might be that the opening in the artery in your groin is plugged closed after the procedure. This is done with a device to seal the artery which dissolves within a few weeks.

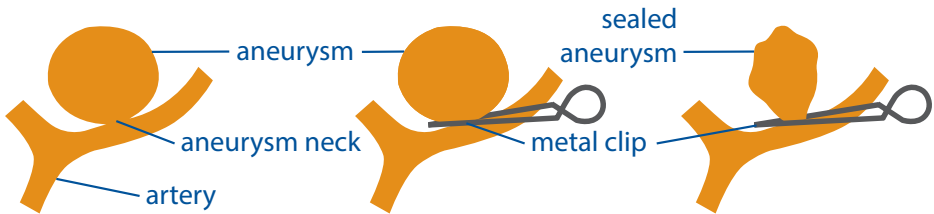
You will have to lie flat, or at an angle of no more than 30 degrees, for at least six hours following the procedure. This helps with your blood pressure and prevents any excess pressure on the artery which could increase the chance of bleeding at the incision site in your groin.

Depending on your recovery after this time, you will be helped to sit up gradually. The nurses on the ward or the high dependency unit, will continue to monitor you and carry out neurological observations. Painkillers will be given for any discomfort or headaches you might be experiencing. You are also likely to have a drip to prevent dehydration, and possibly a urinary catheter. Because you are restricted to bed rest, you will have to wear compression stockings to help prevent blood clots (deep vein thrombosis) forming in your legs.

## Clipping

Aneurysms that are not suitable for coiling or other similar forms of treatment, may be treated using a technique called 'clipping'.

Clipping is a neurosurgical procedure in which a neurosurgeon makes an opening (a craniotomy) in the skull to expose the surface of the brain. The neurosurgeon then closes off the blood flow to the aneurysm by securing a small metal clip at the base of the aneurysm.



In time, the blood vessel lining will heal where the clip has been placed, and this will permanently seal the aneurysm and prevent it from growing or rupturing again.

## What happens before the operation?

Your general state of health and your condition at the time can affect when you have the surgery. The neurosurgeon and anaesthetist might delay the operation if you are very ill as a result of the haemorrhage, or another medical condition, because this can increase the risk of complications.

The operation is carried out under a general anaesthetic which means you will be asleep throughout and will not feel anything.

The operation takes a few hours. This includes the time taken to transport you from the ward to the operating theatre, give you the anaesthetic, the operation itself, and the time you spend recovering from the anaesthetic.

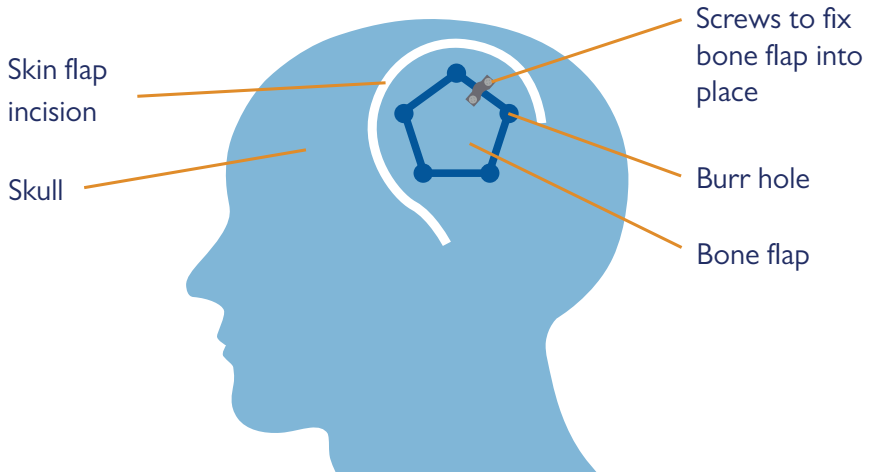
## What happens during the operation?

In order to be able to treat the aneurysm, the neurosurgeon will begin by performing a procedure known as a craniotomy in order to expose the brain. The word craniotomy means making a hole (-otomy) in the skull (cranium).

During the procedure a small horseshoe-shaped area of your hair is shaved over the point at which the aneurysm can be reached. An incision (cut) is then made in the scalp, and a section of bone is removed in order to expose the area of the brain where the aneurysm is.

Once the craniotomy has been performed, the neurosurgeon looks for the aneurysm and permanently clamps the base of the aneurysm using a small metal clip.

The bone flap is then replaced and the scalp closed using stitches or skin clips. The bone flap is usually fixed into place with small metal screws to prevent any movement and encourage healing.



### What happens after the operation?

You will usually be woken up as soon as the operation is over. You will regain consciousness in the recovery area where your progress will be monitored very closely.

Occasionally, intensive monitoring is required, and you might be transferred to an intensive therapy unit or a high dependency unit. You might then be kept asleep on a breathing machine for a period of time after the operation, to allow your brain to recover. If this is likely to be necessary, your neurosurgeon will discuss it with you before the operation.

Once you have been transferred back to the ward you will be carefully observed and monitored. Sometimes a fine tube (urinary catheter) will

have been placed into the bladder to help you pass urine. To keep you hydrated, you will be given fluids through an IV (intravenous) drip. You might also have a drain to remove any fluid from around your wound. All of these tubes will gradually be removed as your condition improves.

### What problems might I experience after the operation?

Rarely, a blood clot might form on the surface of the brain at the site of the operation. You might need a second operation to remove it if this happens, depending on the size of the clot. Otherwise, the doctors and nurses will monitor your condition.

You might have difficulty in opening your mouth fully. This is because during a craniotomy, a small cut is made in the muscle that helps with chewing. As it heals after the operation, the muscle can be slightly shortened causing the jaw to feel stiff. This problem usually begins to clear up after a couple of months.

It is common for there to be swelling and bruising to your face. Your eye might be closed for a day or two. The nurses will help bathe your eye.

As the wound in your head heals, it might feel painful and you will be offered pain-killers to help relieve any discomfort. This gradually improves and is usually better by the time the stitches or skin clips are removed. Some surgeons use stitches that dissolve and so do not need to be removed.

The skin around the edges of the wound may feel a bit numb until the healing is complete. This numbness might be uncomfortable or unpleasant and the wound might also feel itchy, or very cold. This may last for a few months.



Wound infection is not usually a problem. Antibiotics are often given around the time of the operation as a preventative measure. Lumps or indentations around the wound are common.

The bone flap (the piece of bone cut out during the operation) might feel like it moves. You might also experience a “clicking” sensation. This is because the pressure in your head can vary, and the flap of bone can move in and out very slightly. Although this feels strange, it is not dangerous. The bone flap is not loose; it is secured when it is replaced and will heal back into place.

Headaches are common and might last for several months before they gradually settle down. Some people find that their headaches persist for a longer period of time. This is due to the SAH, not the clipping.

### Can the clip come off?

The risk of the clip coming off is extremely small. Modern clips are not affected by airport security systems. Most people are also safe to have MRI scans, but you should discuss this with your doctor or nurse.

## Medications

The following are the most common medications prescribed during and after the haemorrhage.

### Nimodipine

Nimodipine is a drug used to reduce the risk of further damage to the brain. It helps to prevent the sudden contraction (spasm) of blood vessels in the brain, which may result in delayed cerebral ischaemia (see page 25). Nimodipine is taken for three weeks following your SAH.



### Pain relief

In the early days, you may be prescribed strong pain-killers like morphine or codeine. Other painkillers like paracetamol are used for headaches, as needed.

### Anti-emetics

These drugs can help to stop you feeling sick, and stop you vomiting.

### Anti-epilepsy drugs

Anti-epilepsy drugs (also sometimes called anticonvulsants) might be used to control seizures. Some people might only need to take them for a few months, but some people might need them for life. It is important not to forget to take this medication. It can be helpful to use a special reminder pill box which can show you when your pills should be taken, as your memory might not be reliable in the first few months after the haemorrhage.

# Complications after SAH

A subarachnoid haemorrhage can cause both short and long-term complications and effects.

Serious short-term complications can happen before the aneurysm is treated. These may include further bleeding at the site of the aneurysm and brain damage caused by a reduction in blood supply to the brain. Longer term complications and effects may include epilepsy as well as changes to a person's mood, emotions and cognition (thinking).

## Short-term complications

### Re-bleeding

This is when the aneurysm ruptures again after the first haemorrhage. The risk of this occurring is at its peak in the few days following the first haemorrhage. If re-bleeding occurs, there is a high risk of permanent disability, or even death. Aneurysm repair is required as soon as possible.

### Delayed cerebral ischaemia

Delayed cerebral ischaemia (DCI) can occur when there is a dangerously low supply of blood to the brain. This affects the functioning of the brain and can lead to further damage. A possible cause of DCI is vasospasm where blood vessels constrict and become narrower, reducing the flow of blood to the brain. Studies looking at other causes are on-going.

DCI typically develops within three to 14 days after the initial haemorrhage. Symptoms include increasing drowsiness, and the development or worsening of neurological symptoms, such as weakness of one side of the body or difficulty speaking.

## Hydrocephalus

This is a build-up of the cerebrospinal fluid (CSF) which surrounds the brain and spinal cord. The build-up occurs because the CSF cannot drain away due to the presence of blood in the subarachnoid space. Symptoms include generalised headache and problems with balance. An operation can be performed to drain the fluid away from around the brain or spinal cord using a temporary drain or permanent shunt.

## Seizures

Seizures can occur at any time after the haemorrhage, but are most common during the first 24 hours. If you do have seizures they can usually be controlled with medication.



For more information you may be interested in reading our fact sheets on hydrocephalus and shunts, and epilepsy.

## Longer term complications and effects

These will differ from person to person and can include:

- Fatigue and headache (see page 29-30)
- Memory problems and difficulties concentrating (see page 34)
- Emotional problems (see page 36)

## Epilepsy

Epilepsy occurs in around one in 20 people who have suffered an SAH.

The first seizure normally occurs in the year following the haemorrhage. Epilepsy can be controlled using medication, which a neurologist will discuss with you if it is needed.

# Going home

You might be discharged home or back to your first hospital. This will depend on the speed of your recovery, what support you have at home, and how far you have to travel.

Depending on the effects of your SAH, you may be referred for physiotherapy, occupational therapy, or speech and language therapy.

## What follow-up tests and investigation will I need?

It is likely that you will have a follow-up MRA scan after three to six months. You may have further MRA scans after this. The timing of the follow-up tests will differ depending on the set-up in your local area.

## What precautions should I be taking now?

- Continue to take your medication as prescribed
- Keep up your fluid intake (two to three litres a day for the first 2-3 weeks)
- Stop smoking if you currently smoke
- Don't return to driving until advised by your specialist (see page 38)
- Avoid activities where there is an increased risk of falling for the first three months
- Make sure your blood pressure is controlled

## Medication for high blood pressure

If you have high blood pressure, you might need medication to lower it. Because having high blood pressure is known to increase the risk of haemorrhages, it is important that your blood pressure is monitored and controlled. When you return home, you should have regular blood pressure checks with your GP.

## Diet and fluids

It is important to maintain a healthy diet so that your body is getting the nutrition it needs for strength and recovery. It is also very important to keep up your fluid intake and prevent dehydration. You should aim to drink two to three litres each day for the first couple of weeks. A healthy diet and plenty of fluids will also prevent you becoming constipated which can cause a strain in the body.



## Is there permanent damage?

Not necessarily. It is possible for people to make a good recovery, and in some cases a full recovery.

The rate at which someone recovers and improves will be individual to them. Some people may experience disabilities and long term problems which can continue to improve several years after an SAH.

Specialists such as physiotherapists, occupational therapists, and speech and language therapists, may be able to help you develop ways of managing and overcoming some of the problems that you might experience.

# Recovery

Recovery from an SAH is an individual process and there is no standard pattern. It is very difficult to predict what sort of recovery you might make, or what timescale might be involved.

Your long-term recovery will depend on which part of the brain is affected and how much damage is done by the bleeding. You may experience one or more of the following after your SAH.

## Tiredness, restlessness and fatigue

It is common to experience severe tiredness, especially in the first few months after the haemorrhage. This is your body's way of telling you to slow down. Excessive tiredness that does not improve through resting is known as fatigue. Fatigue is different to the usual kind of tiredness you may have experienced before your SAH. You might find that you become exhausted even after commonplace activities like going to the shops, watching television, or talking with your friends. This is because your brain has to work harder to process everything going on around you and becomes tired very quickly.

It can help to have a daily routine. Try to get up and go to bed at the same time each day, and plan regular short breaks throughout the day for relaxation. Do this at least three times a day for around 20-30 minutes. Listening to your favourite music can help, but try to avoid anything too stimulating like watching television or reading in the first few weeks. Different people find different activities relaxing, so do what best suits you. If you have returned to work, you could talk to your employer about the possibility of being given time for extra breaks during the working day.

You may also find that you have difficulty sleeping at night and can only sleep for short periods. If you wake in the night and cannot get back to sleep, try getting up and making a hot drink rather than lying there worrying about not sleeping. You may want to avoid drinks containing caffeine, as this can make it harder to return to sleep.

### Headaches

Headaches following your discharge from hospital are common. They tend not to be as severe as when you had the haemorrhage, and usually ease with time. You will be discharged with painkillers, like paracetamol, to help control them. You may find that your headaches are associated with tiredness or fatigue, or following periods of concentration.

Again, this is your body's way of telling you to slow down. To prevent dehydration, it is important you drink some fluids throughout the day - about two litres in total. Alcohol, and caffeine-based drinks like cola and coffee can increase the risk of headaches.

It is also important to avoid things that put too much strain on your body like becoming constipated or lifting heavy weights as these can increase the pressure around the brain and cause headaches.

### Temporary hair loss after treatment

Rarely, if your aneurysm has been treated by coiling or another kind of endovascular treatment, you may experience some hair loss (alopecia) after about three weeks. This occurs in the area where your aneurysm was treated and is a normal reaction to the type of imaging used. After about three months you should notice your hair starting to grow back.

If you do notice any redness, swelling or discomfort in this area, contact your specialist nurse.



## Unusual sensations

People often say that they experience odd or unusual sensations in their brain which are different from headaches. They are very difficult to explain but people sometimes describe them as “tickly” and something like water running across the surface of the brain. No-one knows why these sensations occur but they are common and are nothing to be concerned about. They will usually ease in time.

## Loss of movement and/or feeling

An SAH can cause a loss of movement and/or feeling in your arms or legs. Each individual is affected differently and the severity of the problems can vary from a slight arm or leg weakness to a complete loss of power.

You might also feel odd sensations in your arms or legs. These can be difficult to describe. The feeling of clothes against the skin or the touch of another person may be exaggerated. Limbs might feel heavy and numb. Some people experience pins and needles. It might be difficult to distinguish between hot and cold - if this is the case, you should be careful when taking a bath or shower to avoid getting burned.

You can experience any combination of these problems so you will need an individual assessment and exercise plan. This plan will be devised for you by a physiotherapist, either in hospital or in your home. Try not to over exercise as this can lead to injury and might delay your recovery. It is better to do little and often.

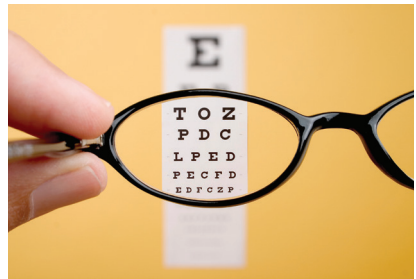
It can be helpful to apply body lotion or massage oil regularly to your affected limbs. This maintains good skin condition and massage may help keep your muscles supple.

## Senses

Following an SAH, some or all of your senses might be affected, including your sight, smell, taste, touch and hearing. The problems will depend on the particular part of the brain affected. Some of the symptoms might be temporary; some might be permanent.

### Sight

Your vision might be affected in a number of ways, including blurring, blind areas, black spots, or double vision. Your vision may be tested before you are discharged from hospital, and tests may be repeated at follow-up appointments. This is so any changes can be monitored over time. If you do have visual problems as a result of the haemorrhage, you might be referred to an eye specialist. Improvements in vision usually take place gradually over weeks and months.



If you already wear glasses or contact lenses it is a good idea to wait for two or three months after the haemorrhage before having your eyes tested again. This is because your vision might take a while to settle down. Your optician will be able to advise you further on the best course of action to take during your recovery period.

## Speech

Speech, language and comprehension are complex forms of communication, and can be affected following an SAH. Depending on what part of the brain has been affected, the problems people face can be different.



Some people experience difficulty finding the right word or expressing what it is they want to say, but have no problem understanding others. This is sometimes called expressive dysphasia or aphasia.

Others might be able to express themselves without a problem, but can find it difficult to understand what another person is saying to them. They might also find it difficult to read and understand written text. This is sometimes called receptive dysphasia or aphasia.

**Communication problems** can be very frustrating and you might need the help of a speech and language therapist who can assess your problems and needs. Following the assessment, they will give you guidance and exercises for you to practice at home.

You might find it helpful to use a picture board. This could be a sheet of paper displaying pictures of everyday items and the alphabet. If you are having difficulty finding words you can point to a specific picture on the board or use the alphabet to spell out what you want to say.

## Memory

Memory and concentration problems are common following an SAH. You might find it difficult to concentrate for long periods of time and this might make even simple tasks like reading a book or making a cup of tea difficult and frustrating. Try to break tasks down into small steps so you only have to concentrate for short periods of time before taking a rest.



After an SAH, certain parts of your memory might be affected. You might not remember very much about the haemorrhage itself or what happened when you were admitted to hospital. You might find that you can remember things that happened to you a few years ago but find it difficult to remember new information like the name of the person you have just met. Many people find that their memory improves with time, although it might never be quite as good as it was before the haemorrhage.

You can ask your GP or neurologist to arrange for you to see a psychologist who can carry out a neuropsychological assessment. Typically, this will involve doing a number of different tests to assess what specific memory and concentration problems you are experiencing.

There are techniques to help you cope with these difficulties, such as the use of memory aids, and breaking tasks down into more manageable steps. You may find either an occupational therapist or a neuropsychologist useful in helping you with any problems you experience that affect your memory or ability to think.

## Helpful tips to aid with your memory

Keep a book or a diary where you write down all the important things you need to remember. Try to keep it in the same place: for example, by the telephone.

Write down peoples' names in a notebook or on a calendar as soon as you can. Post-it notes in bright colours can be really useful memory aids as you can stick them anywhere.

Pictures are often easier to remember than abstract facts. For example, if you meet someone called Anne Fisher you might think of Princess Anne and imagine the person you met wearing a crown and fishing by a river bank. The more bizarre the picture, the easier it will be to remember.

Try not to get too anxious or stressed as this will make it more difficult to remember information. If you do become anxious, take some deep breaths, breathing in through your nose and out through your mouth.

Use an alarm clock to help you to remember to do something like make a telephone call or go to an appointment.

## Emotions

Many people find it difficult coming to terms with having had an SAH. You might feel depressed, tearful, angry or anxious for no apparent reason. These feelings can be physical (related to what has happened to your brain), emotional (a reaction to the traumatic experience), or both. In some cases, people may experience depression, anxiety disorder or PTSD (post-traumatic stress disorder).

Many of these changes are temporary and will improve over time. It can be helpful to stick to a routine and plan what you are going to do each day, even if it's just going to buy a newspaper or going for a walk in the park.

As time goes by, it can be hard to express and explain to others how you feel and how you have changed, especially as you might appear to have recovered physically. This can lead to feelings of isolation. It often helps if you can talk to a friend or relative about how you are feeling rather than keeping your feelings bottled up inside.

If you are concerned or feel you might benefit from trained support, talk to your GP about seeing a clinical psychologist, neuropsychologist or counsellor.

## Feelings and worries

It is natural to feel anxious and to worry about the future, especially when you are back at home. Many people are concerned that the haemorrhage might happen again, although this is very unlikely.

It can be difficult recovering from such a major life event. The first few weeks and months can be a very intense time and you might find that friends and family treat you differently. Everybody has different

ways of coping. If you are struggling to come to terms with what has happened it might be helpful to keep a simple diary of your thoughts and your physical recovery. This will also help you to record how you are improving as time passes.

It is common for people to become irritable or angry after an SAH, but they might not be aware that their behaviour or personality has changed. Irritability or angry outbursts can be very difficult for friends or family to cope with. Communication and talking openly is important at this time.

# Everyday activities

## Can I drive?

You must not return to driving until you are told it is safe for you to do so by your doctor or specialist.

When you can return to driving will depend on your recovery and whether you are experiencing any on-going problems that affect your ability to drive. If you have seizures or epilepsy, for instance, you will have to wait until the seizures are controlled.

Your doctor or specialist will be able to tell you if it is necessary for you to contact the Driver and Vehicle Licensing Agency (DVLA).

It is **your** responsibility to tell the DVLA about your condition if it is necessary. In some cases the DVLA may require a driver to surrender their licence until they are recovered and have been certified by their doctor as safe to return to driving.

If you are required to contact the DVLA, you must also contact your motor insurance provider. You must tell them of any changes to your licence or adaptations you make to your vehicle.

Even if you have not been told to contact the DVLA, it is best to speak to your insurance provider about your condition before returning to driving, in case this affects your policy or you want to make changes to it.

Drivers with HGV (Heavy Goods Vehicle) or PSV (Public Service Vehicle) licences are required to notify the DVLA, as restrictions are stricter for this group of drivers.



## Can I fly?

Yes, depending on your recovery. You are advised to avoid flying until six weeks after a subarachnoid haemorrhage, as you are unlikely to feel well enough to travel. There is nothing to stop you from flying once you are fit enough to do so and your specialist will be able to advise you on this. You should inform your travel insurance company about the haemorrhage before you travel.

You might experience headaches during take-off and landing due to pressure changes. You should make sure you keep moving during longer flights and maintain your fluid intake to stay well-hydrated. Try to avoid alcohol and caffeine as these can increase the risk of headaches.

It is worth bearing in mind that air travel can be stressful for people in good health so it can be especially stressful if you are feeling unwell.

## Will airport security machines affect the coils, clips, or shunt?

Coils and clips will not be affected and it is safe to pass through airport security machines with these.

If you have a shunt, please be aware that some types can be affected by strong magnetic fields and you should speak with your specialist or nurse for further information.

## Will MRI or MRA scans affect the coils, clips, or shunt?

Modern platinum coils and metal clips are designed to be safe with MRI scanning equipment. Scanning equipment varies in different hospitals so you should discuss this with the radiologist or consultant.

## Can I play sport?

Yes, but you should avoid all contact sports like rugby, boxing or martial arts for at least six months. You can then discuss with your specialist the possibility of resuming these sports if you wish to.

## What if I bang my head?

A bang on the head will do no more harm than before the haemorrhage.

## Can I swim?

Swimming is fine once any wounds have healed, but it is a good idea to be accompanied for the first few months while the risk of having seizures is at its highest.

## Can I have sex?

You can resume sexual activity as soon as you feel ready. There is no risk. Women are advised to avoid becoming pregnant for the first six months following subarachnoid haemorrhage.

## Can I wash or colour my hair?

Yes. You can use any hair products like shampoo, conditioner or hair dyes. You can also have treatments like perms. After a craniotomy, you should wait until the wound on your head has healed.

## Can I drink alcohol?

You should not drink any alcohol for the first few weeks. After that, small amounts of alcohol are safe, depending on any medication you may be taking. You are, however, likely to feel the effects more than you used to. Some people find that they have more severe hangovers after an SAH. If you are taking any medication, you should check with your doctor if it is safe to drink alcohol.

## When can I go back to work?

It is common for people who have had an SAH to take several months off work. It will depend on the individual and their recovery as to when they feel ready to return.

Many people find it helpful to go back part-time or for a few hours each week before returning to full-time work. You might want to talk to your employer about the possibility of being given time for extra breaks during the working day. Other people find it helpful to do a less stressful or less physical job than the one they used to do.

As a stepping stone to returning to work, you might like to see if there are any clubs or voluntary organisations with whom you can volunteer.

### **How can I support myself if I can't work?**

Being unable to work can be a source of worry for many people and can greatly affect their household income.

Depending on your situation, you may be entitled to sick pay from your employer or you may be able to claim benefits. Organisations such as the Citizens Advice Bureau or Money Advice Service, can provide you with information on what income support you may be entitled to.

If income is likely to become a problem and you have loans or a mortgage, you may want to speak with your bank or building society early on to explain your situation.

# Getting back to normal

## Am I progressing quickly enough?

There is no set timescale. Each person is different. You can expect to have good days and bad days during your recovery. Tiredness and fatigue are common after any serious illness, especially if you have had surgery.

## Am I doing too much?

You will know if you are doing too much if you become exhausted and need to rest. Try to recognise when your body is letting you know that you need to slow down.

## Will I ever be the same again?

It can take many months after an SAH to feel that life is getting back to “normal” and people often ask whether they will ever be the same again. This is a very difficult question to answer as everyone’s recovery is different.

There is not a great deal that you can do to speed up your recovery. The main advice is to take it easy and listen to what your body is telling you.

# For friends and family

It can be difficult for friends and family to understand what has happened to someone who has had an SAH. They might look fine physically, but it can take a long time to get back to “normal”.

Often, friends and family find it hard to know what to say. They do not know whether to ask someone if they are OK, or to behave as if nothing has changed. People who have had an SAH can find it difficult to talk about the problems they are experiencing and might feel isolated as a result. You could mention that you have read this booklet as a way to introduce talking about how the person is feeling.

## Tips for friends and family:

- Keep a routine and avoid surprises
- Try not to take remarks personally
- Try to keep calm at all times
- Try not to let too many people visit at the same time, or have too many distractions going on

# Your Healthcare team

You will be looked after by health professionals who specialise in different areas of your care. They form a team called a multi-disciplinary team or MDT. We have listed some of the main professionals you are likely to see, but you may not have contact with all of them.

**Clinical nurse specialist (CNS):** a nurse who specialises in a particular condition, or conditions.

**Counsellor:** a person trained to give guidance on personal or psychological problems

**Interventional neuroradiologist:** a specialist radiologist who treats aneurysms in the brain via the blood vessels.

**Neurologist:** a doctor who specialises in the diagnosis and treatment of people with neurological conditions, for example epilepsy.

**Neurophysiotherapist:** a physiotherapist who specialises in treating people with neurological conditions. A neurophysiotherapist assesses symptoms, plans treatment and treats people with physical problems.

**Neuropsychologist:** a psychologist specialising in the functions of the brain, particularly memory, concentration and problem solving.

**Neurosurgeon:** a specialist doctor who performs brain and spine operations.

**Occupational therapist:** a specialist health professional who offers practical support and advice on everyday skills and activities like washing, cooking and using equipment at home.

**Radiologist:** a specialist doctor who performs, reads and reports on scans such as angiograms, CT scans, MRI scans and X-rays.

**Speech and language therapist:** a specialist health professional who assesses symptoms, plans treatment and treats people with communication and swallowing problems.

# Other useful organisations

## Brain and Spinal Injury Charity (BASIC)



[basiccharity.org.uk](http://basiccharity.org.uk)



0161 707 6441



[enquiries@basiccharity.org.uk](mailto:enquiries@basiccharity.org.uk)

A charity that supports people recovering from acquired brain injury and spinal injury, and helps people manage long-term neurological conditions.

## The Brain Charity



[thebraincharity.org.uk](http://thebraincharity.org.uk)



0800 008 6417 (helpline)



[info@thebraincharity.org.uk](mailto:info@thebraincharity.org.uk)

A charity who offer emotional support, practical help (such as employment and benefits advice), and social activities to anyone with a neurological condition and to their family, friends and carers.

## Different Strokes



[differentstrokes.co.uk](http://differentstrokes.co.uk)



0345 130 7172



[info@differentstrokes.co.uk](mailto:info@differentstrokes.co.uk)

A charity that offer information and support for younger people affected by stroke.



## The Stroke Association



[stroke.org.uk](https://stroke.org.uk)



0303 3033 100 (helpline)



[helpline@stroke.org.uk](mailto:helpline@stroke.org.uk)

A charity who deliver stroke services across the UK, campaign for better stroke care and who invest in research.

## Mental health

### Anxiety UK



[anxietyuk.org.uk](https://anxietyuk.org.uk)



03444 775 774 (helpline)



[support@anxietyuk.org.uk](mailto:support@anxietyuk.org.uk)

Information and support on anxiety.

### Mind



[mind.org.uk](https://mind.org.uk)



0300 123 3393 (helpline)



[info@mind.org.uk](mailto:info@mind.org.uk)

Research, information and support on mental health.

## Rethink Mental Illness



[rethink.org](https://rethink.org)



0300 500 0927



[info@rethink.org](mailto:info@rethink.org)

Information and advice on mental health.

## Visual problems

### Royal National Institute of Blind People (RNIB)



[rnib.org.uk](https://rnib.org.uk)



0303 123 9999



[helpline@rnib.org.uk](mailto:helpline@rnib.org.uk)

A charity offering information, support and advice to people in the UK with sight loss and visual problems.

## Epilepsy

### Epilepsy Action



[epilepsy.org.uk](https://epilepsy.org.uk)



0808 800 5050 (helpline)



[helpline@epilepsy.org.uk](mailto:helpline@epilepsy.org.uk)

A charity providing information, advice and support for people with epilepsy.

## Epilepsy Society



[epilepsysociety.org.uk](https://www.epilepsysociety.org.uk)



01494 601 400 (helpline)



[fromthehelpline@epilepsysociety.org.uk](mailto:fromthehelpline@epilepsysociety.org.uk)

A charity providing information, advice and support for people with epilepsy.

## Driving

### Driver and Vehicle Licensing Agency (DVLA)



[dvla.gov.uk](https://www.dvla.gov.uk)



[direct.gov.uk/motoring](https://www.direct.gov.uk/motoring)



0300 790 6806

Information and services for drivers.

## General advice

### NHS Choices



[nhs.uk](https://www.nhs.uk)



NHS non-emergency line: 111

Medical advice and information on NHS services.

## Money and benefits

### Citizens Advice Bureau



[citizensadvice.org.uk](https://citizensadvice.org.uk)



03444 111 444

Citizens Advice give free, confidential information and advice to assist people with money, legal and other problems.

### Money Advice Service



[moneyadviceservice.org.uk](https://moneyadviceservice.org.uk)



0800 138 7777



[enquiries@moneyadviceservice.org.uk](mailto:enquiries@moneyadviceservice.org.uk)

An independent service that provides free and impartial advice on money and financial decision to people in the UK.

# Our online support groups

"This page and this group has been the single biggest support for me and obviously countless others."

- Facebook SAH group member

Online communities are a great way for people to interact, share their stories and experiences, and provide mutual support. They are also a great way for people to alleviate stress and health anxiety as people realise they are not alone.

## Find us on **facebook**

We have set up a private Facebook group for people affected by SAH called 'Subarachnoid Haemorrhage Group - A Space For You'

You can join by searching within Facebook for 'SAHGroupBSF' or go to:



[facebook.com/groups/SAHGroupBSF](https://facebook.com/groups/SAHGroupBSF)

## Find us on **HealthUnlocked**

We also have an online group on HealthUnlocked for people with any neurological condition to share their experiences in an anonymous and safe space.

Search HealthUnlocked for 'Brain & Spine Foundation' to find us, or go to:



[healthunlocked.com/brain-spine-foundation](https://healthunlocked.com/brain-spine-foundation)

## More information from us

The Brain & Spine Foundation produces other booklets and fact sheets that give more information on topics mentioned in this booklet:

- Head injury
- Vascular malformations of the brain
- Brain and spine scans
- Lumbar puncture
- Migraine
- Stroke

These publications are available to read or download through our website. Booklets are also available in print, on request. Requests can be made through the website or the Brain & Spine Helpline: 0808 808 1000

## References and feedback

Details of references used for this booklet can be requested by sending an email to [references@brainandspine.org.uk](mailto:references@brainandspine.org.uk)

We welcome any feedback or comments you may have about this booklet. Send an email with your thoughts to [feedback@brainandspine.org.uk](mailto:feedback@brainandspine.org.uk)

## Thank you

We would like to thank all our service users who helped us review this booklet and our health professional reviewers: Helen Wood (Clinical Nurse Specialist), Lesley Foulkes (Clinical Nurse Specialist), Catherine Lamb (Clinical Nurse Specialist), and Dr Fergus Robertson (Consultant Neuroradiologist).

# Brain & Spine Foundation

Our mission is to improve the quality of life of people affected by neurological problems by providing expert information, support and education.

You can call or email our **Helpline** for further support or information at:



**0808 808 1000**



**helpline@brainandspine.org.uk**

**We rely on donations** to provide our services to anyone who needs us. If you want to **support us**, you can:



Donate **online**



Donate **by phone**



Send a cheque **by post**

## Contact us

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