

Department of Neurosciences

Sub-arachnoid haemorrhage

Information for patients, relatives and carers

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Introduction

Sub-arachnoid haemorrhage affects 8,500 people each year in the UK (Information from Brain and Spine Foundation 2002). The majority of these occur in people under 55 years of age, with females affected more often than males.

This information is intended to be used as a general guide for patients, relatives and carers following a sub-arachnoid haemorrhage. This condition affects each person differently, it is important that you speak with your consultant, registrar or clinical nurse practitioner (CNP) as they can offer advice and support to meet your own specific needs.

This booklet has been written to answer some of your questions and provide evidence based medical information.

Words that are printed in **bold** are explained in the glossary.

What is a sub-arachnoid haemorrhage?

A sub arachnoid haemorrhage is a sudden leak of blood (**haemorrhage**) over the surface of the brain. The brain is covered by a series of **membranes**, one of which is called the arachnoid (see figure 1). A sub-arachnoid haemorrhage occurs beneath this layer. The blood vessels supplying blood to the brain lie in this space, surrounded by clear fluid (**Cerebro-spinal fluid**).

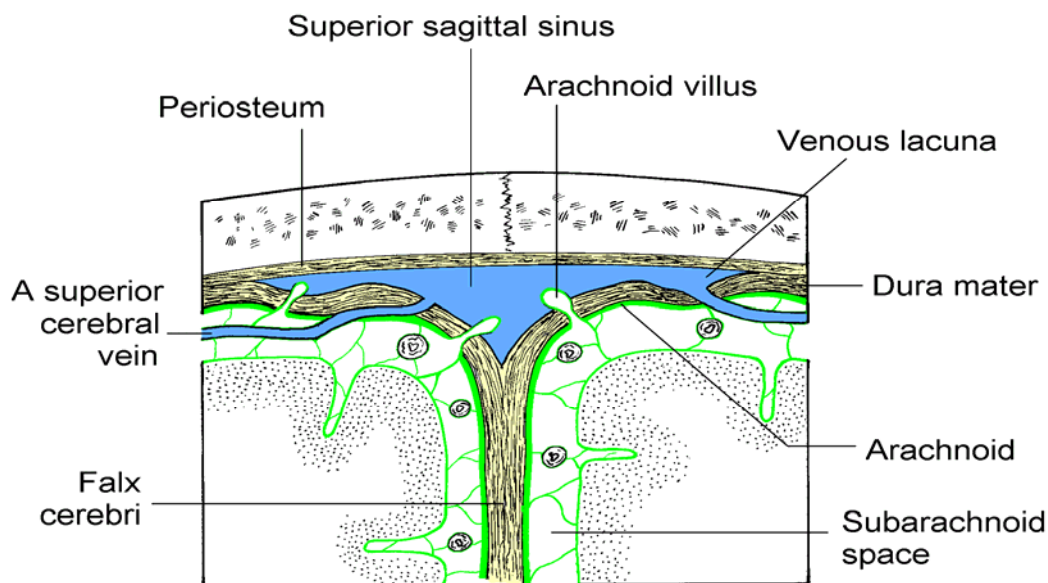
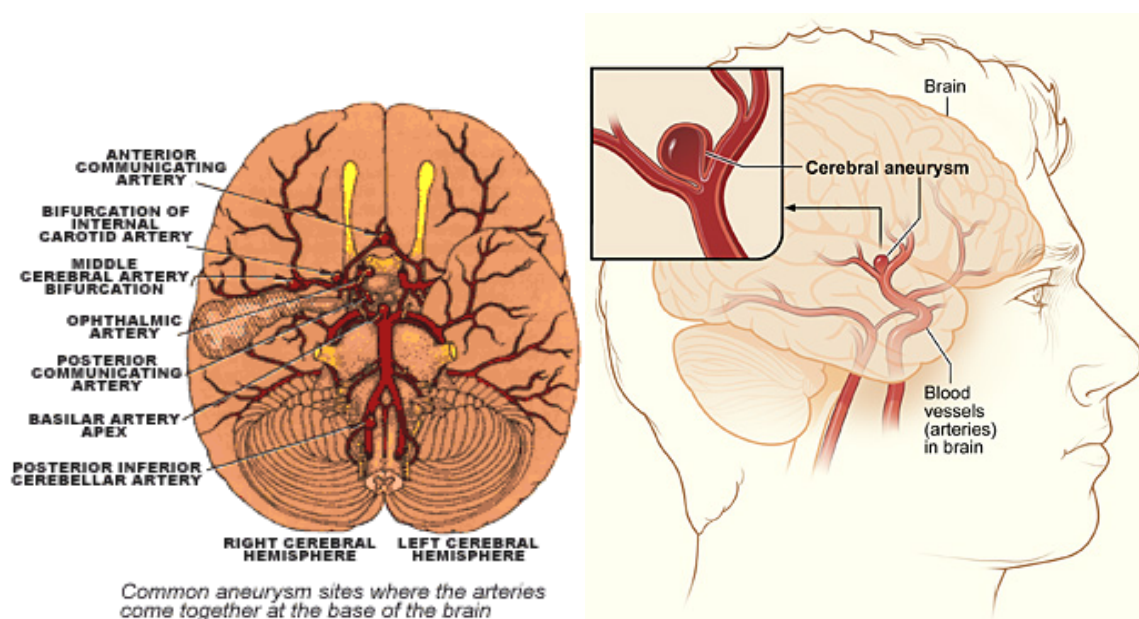


Figure 1: *diagram of the membranes covering the brain*

What causes it?

In 75% of cases, there is a weakness in the wall of one of the blood vessels supplying blood to the brain. This balloon-like swelling is called an **aneurysm**. The haemorrhage occurs when the aneurysm wall tears because of the pressure of blood. When this happens blood bursts into the surrounding tissues.

Aneurysms also occur in other parts of the body. The reason why they develop is not fully understood, but there is a greater risk of them occurring in people with high blood pressure and people who smoke. They become more common as people get older. There is no link between aneurysms and stress.



Could I have prevented it?

Although people who smoke and those with high blood pressure have a greater risk of developing aneurysms, not all of them will develop an aneurysm, and aneurysms also occur in people with no 'risk factors'.

Sometimes an aneurysm may press on an important part of the brain and signs that this has happened may develop. Usually, it goes undetected causing no symptoms until it bursts.

Why me?

We do not know why it happens and in most cases there is no way of identifying those people who are at risk. Smokers are high risk as are those with high blood pressure.

Why now?

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

Can I pass the risk to my children?

Only in rare cases is the risk of developing aneurysms inherited. Speak to your consultant if you are worried about this.

Symptoms and tests

What are the symptoms of bleeding in the brain tissue?

- A sudden, severe headache 'worst headache of their life, often at the back of the head.
- This is often followed by being sick (vomiting). The headache usually persists for more than an hour.
- Photophobia - disturbed by light.
- Neck stiffness.
- Dysphasia (difficulty finding words).
- Confusion - disorientated to time, person, place or thing.
- In more severe cases, the person may collapse and lose consciousness. Some people also have a fit (seizure).

What happens next?

Most people are first admitted to their local hospital, where the haemorrhage is confirmed by a **CT scan** of the brain or by examining a sample of the fluid from the spine (**lumbar puncture**).

You will then usually be seen by a neurosurgeon here at Addenbrooke's, which is a regional centre with particular expertise in dealing with a sub-arachnoid haemorrhage. You will be admitted to a neurosurgical ward for further investigations which may include a **CT angiogram** and/or **digital subtraction angiogram** (explained in a separate information leaflet) or an MRI scan.

Treatment

Each case is considered individually and can be dependent on many factors. The best treatment will be discussed between the consultant neurosurgeon and consultant radiologist. This will then be discussed further with the patient and/or family. Any treatment method carried out on the blood vessels of the brain carries the risk of serious complications including **stroke** and death. The aim of the treatment will be to reduce the chances of another haemorrhage occurring from the same site in the future.

Pre-operative treatment

Whilst you are on the ward our aim is to:

- Promote rest, and control any pain and nausea.
- Keep close observation of signs such as blood pressure and neurological state.
- Give three litres of fluid in 24 hours. This will be given through the veins (IV-drip) if the patient is unable to manage this quantity orally.
- Control headaches with pain killers.
- Control nausea with anti-sickness medication.
- Nimodipine – 60 mg orally four hourly, continued for 21 days. Given to reduce the effects of **vasospasm**. Should not be given if there is a pre existing major kidney, liver or lung disease, pre existing heart problems or a recent heart attack (within six months).
- Avoid constipation and straining. Some pain medication can cause constipation. Please speak to your doctor if this is causing a problem as laxatives may be necessary.
- Control seizures with medication, but usually only if there has been more than one fit.

Conservative treatment

- Test results may show a bleed but no aneurysm. In this case nimodipine will be stopped and you will be encouraged to mobilise and go home within a few days.
- Continue the high fluid intake to help disperse the blood. We may do a follow up check angiogram in three to six months.
- Some people have an aneurysm that ruptured to cause **SAH** but it was left untreated. This is usually because the risks to the patient of treatment were greater than the risk if nothing were done.
- After six months, the risk of another haemorrhage from a previously ruptured but untreated aneurysm is small.

It is advisable to **stop smoking**, drink alcohol in moderation and your GP will be asked to ensure your blood pressure is kept within normal limits.

Surgical treatment - clipping

- This involves an operation under a general anaesthetic, and is carried out by a neurosurgeon.
- A section of hair will be shaved in theatre and a cut will be made in the scalp (behind the hairline)
- A piece of bone will be removed in order to allow the surgeon access to the brain. Once the aneurysm is seen a metal clip is placed across the neck to seal it off, and prevent the risk of a further bleed from it.
- The piece of bone is then replaced and the scalp stitched or clipped (stapled) together again.

Endovascular treatment – coiling

- This procedure is carried out by a consultant radiologist and done under a general anaesthetic.
- A small catheter is inserted at the groin area into a major artery and navigated, using x-ray screening into the aneurysm. In this way, coils can then be deposited inside the aneurysm. The aim is to pack the aneurysm with coils so that blood is then unable to enter it.
- This procedure was originally developed to treat aneurysms not accessible by surgery and was first performed in the UK in 1992.
- Occasionally other materials may be used rather than coils.
- The long term benefits of coiling have yet to be confirmed but it is expected that the benefits will be long lasting. Follow up angiograms are usually carried out at six months, 18 months and five years post onset of bleed.

Privacy & Dignity

We are committed to treating all patients with privacy and dignity in a safe, clean and comfortable environment. This means, with a few exceptions, we will care for you in same sex bays in wards with separate sanitary facilities for men and women.

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In some areas, due to the nature of the equipment or specialist care involved, we may not be able to care for you in same sex bays. In these cases staff will always do their best to respect your privacy and dignity, eg with the use of curtains or, where possible, moving you next to a patient of the same sex. If you have any concerns, please speak to the ward sister or charge nurse.

After surgery

Once you have had the surgery the greatest risk period is over. However, you may be left with some complications as a result of the bleed which may require further treatment.

The following problems normally completely disappear given time:

- Occasionally, there may be difficulty in opening your jaw for several months.
- Headaches. These are common and may last for several months before they gradually settle down.
- Pain or numbness around the scar. This may persist for the first few months. It may also be itchy or feel cold.
- After the operation, the piece of bone that was temporarily removed during the surgery may feel as if it moves. Because pressure in your head can vary, this flap of bone may move in and out. Although this feels strange, it is not dangerous.

The following rarer complications may require long term treatment:

- **Hydrocephalus.** A build up of Cerebro-spinal fluid (CSF) which surrounds the brain and spinal cord. The build up occurs because it cannot drain away. Symptoms include generalised headache and problems with your balance. A small operation can be performed (a **shunt or EVD**) to drain the fluid away from your brain or spinal cord.
- **Epilepsy.** Fits can occur at any time after surgery or the haemorrhage. If they do occur they can be successfully controlled with tablets. You will have to inform the DVLA (separate leaflet to explain how), this is a legal requirement.

Discharge from the neurosurgical unit

- You may be referred back to your local hospital for convalescence/rehabilitation depending on the speed of your recovery and/or support at home.
- You may go home but will require someone to be with you at all times for the first few weeks.
- You may be transferred to our rehabilitation unit here in Addenbrooke's if you live locally to Cambridge.

What treatments will continue?

The following are the most common treatments prescribed during and after the bleed:

- Nimodipine (round yellow tablets) is a drug used to reduce the risk of stroke related to **vasospasm**. It is used for 21 days after the bleed.
- Painkillers are used as prescribed for headaches. Stronger painkillers such as pethidine are avoided since these are also sedatives (calming drugs) that can be dangerous in this condition.
- Anti-epileptic drugs are used to control fits. This may only be required for some people for a few months. It is important not to forget to take this medication.

You may find it helpful to use a special reminder pill box which shows when pills should be taken. Pharmacists have these or the British Epilepsy Association has details of them (address at the back of this leaflet).

- If you have high blood pressure, drugs to lower the blood pressure may be required.
- **Physiotherapy, occupational therapy and speech and language therapy** may continue to aid your recovery and rehabilitation. Many patients require help for only a limited time and some of the lucky ones none at all!

Look out for any new symptoms such as worsening headaches or worsening disabilities. Contact your GP or your clinical nurse practitioner (CNP) at Addenbrooke's via Addenbrooke's switchboard on 01223 245151 and ask them to bleep 152 165. Try not to be too anxious though, as it is normal to have some headaches.

Why is another patient with the same condition having different treatment?

- Everyone is an individual.
- Sub-arachnoid haemorrhage affects different areas of the brain and differs in severity for each person. Treatments therefore vary.

Anticoagulation

Some consultants may have you take aspirin and a statin (antihypercholesterol) for life. Others for three months post procedure and others not at all. Discuss this with your consultant.

How will life be affected?

- **Eyesight** - you may experience a slight change in vision. You should discuss any changes with your consultant or clinical nurse practitioner (CNP). However, for the majority, vision settles down and improves over the first few weeks. It is advisable to wait eight weeks after the bleed before having your eyes tested. We can discuss this with you when we see you for your three month follow up appointment in clinic. You may have double vision. Ophthalmologists may be involved. We have a separate information leaflet showing face and eye exercises.
- **Personality** - it is rare that somebody is completely different. There may be changes in temperament, for example, passive people may be more fiery and visa versa. You may find you have less patience than you used to and are easily frustrated or irritated.
- **Sexual relationships** - It is safe for you to return to sex as soon as you feel ready, however, this may not be for several weeks. Many people are nervous about returning to their normal sex life, and for some, libido, or sex drive can be reduced. Anxieties may be increased if the bleed occurred whilst having sex. Having sex in the future will not increase your chances of having a subarachnoid haemorrhage.

- **Pregnancy** - For the majority it is safe to have a normal childbirth but it would be best to discuss this with your consultant or CNP.
- **Driving** - You must inform the DVLA (organisations section in this information pack). If you have an accident and have not had permission to drive from the DVLA you will not be insured. Not only that, you will put your life and others at risk.
- **Flying** - Pilots licences will have to be reviewed. Follow the same advice you have been given for driving. Otherwise flying after a SAH is perfectly safe. However, you are unlikely to feel well enough physically for three months or more.
- **Smoking** - Stop. This is a known risk factor in the development of cerebral aneurysms.
- **Alcohol** - You may find you get affected by alcohol more easily than before the bleed. As long as you are not taking medication, particularly anticonvulsants, it is fine to drink in moderation.
- **Perming/dying hair** - As long as your stitches/clips are removed and your wound has healed it is ok to wash, dye and/or perm your hair. You may notice that your scalp is more sensitive to temperature. You may in fact find it more comfortable to wear a hat to protect your head in the hot/cold weather.
- **Mobility** - You may have weakness down one side and this will improve in many patients. The physiotherapist and occupational therapist will be involved in treating/managing this.
- **Dentistry** - treatment is safe after SAH. You may have some jaw pain for several weeks after surgery so you could postpone any treatment until this settles. Inform your dentist if you are on any **anticoagulation** medication.

Some reassurance

Many people recover completely. As long as no other abnormalities are present, you are at no greater risk of having a future haemorrhage than anyone else in the population. You should have a normal life expectancy.

Conclusion

We have tried to cover as many aspects of this condition as possible. If you have any outstanding concerns, you should discuss these either with your GP or the specialists looking after you.

Your clinical nurse practitioner in Addenbrooke's can be contacted via the switchboard 01223 245151 and ask them to bleep 152 165.

No-one should feel embarrassed about asking to go over the same ground again, we would rather you understand correctly.

At the back of this booklet is a list of other organisations which may be able to help you.

Glossary

Aneurysm

An aneurysm is a bulging section in the wall of a blood vessel that has become stretched out and thin. As the wall of the blood vessel bulges out, it becomes weaker and may burst or rupture, causing bleeding. If an aneurysm in the brain bursts, it may cause a stroke.

Angiogram

X-ray examination of blood vessels, we have a separate information leaflet explaining this in more detail.

Anticoagulation

Medication used to thin the blood. Aspirin is the most common low dose therapy used to help prevent stroke or heart attacks. Others that are commonly used are clopidogrel (plavix), heparin and Warfarin.

Arachnoid

The middle of the three membranes covering the brain and spinal cord.

Artery

A blood vessel carrying blood away from the heart.

Catheter

A flexible tube for insertion into a narrow opening so that fluids may be introduced or removed.

Cerebro-spinal fluid (CSF)

The clear watery fluid that surrounds and protects the brain and spinal cord.

CT (computerised tomography) scan and/or CT angiogram

CT- An x-ray system which uses computers to provide a series of cross sectional pictures of the body. The CTA involves a small needle in the back of the hand where contrast is injected. Contrast is a substance (sometimes called a dye) injected to show up the difference between different types of tissue.

Digital subtraction angiogram

This is an x-ray of the brain using a contrast via the femoral artery, under local anaesthetic.

DVT

Deep vein thrombosis (DVT) caused during lack of mobility. The first day post operatively, patients are given a small injection of low dose heparin in their abdomen. This thins the blood to help reduce the risk of a clot developing in the leg. Anti-embolitic socks are worn for the whole time pre and post operatively.

Epilepsy

Disorder of brain function usually characterised by recurrent attacks of unconsciousness (fits or seizures).

GCS - Glasgow coma scale

A scale used to measure the levels of consciousness. GCS 15/15 = normal.

Fig. 2	
Glasgow Coma Scale for Head Injury	
Glasgow Coma Scale,	
Eye opening	
Spontaneous	4
To loud voice	3
To pain	2
None	1
Verbal response	
Oriented	5
Confused, disoriented	4
Inappropriate words	3
Incomprehensible sounds	2
None	1
Best motor response	
Obeys	6
Localizes	5
Withdraws (flexion)	4
Abnormal flexion posturing	3
Extension posturing	2
None	1

Haemorrhage

The escape of blood from a ruptured blood vessel, externally or internally.

Hydrocephalus

An abnormal increase in the amount of cerebro-spinal fluid (CSF) within the cavities of the brain.

Lumbar puncture

A procedure in which cerebro-spinal fluid (CSF) is extracted for diagnostic purposes, using a local anaesthetic, by means of a hollow needle inserted into the sub-arachnoid in the region of the lower back.

Membrane

A thin layer of tissue surrounding an organ, lining a cavity or separating structures or cavities.

MRI (magnetic resonance imaging)

a type of scan which makes use of magnetic fields and radio waves to provide images of the internal structure of the body.

Neurological

Refers to conditions occurring in the nervous system, including the brain, spine and all the peripheral nerves.

Nimodipine

A vasodilator given to reduce the effects of vasospasm.

Occupational Therapy

Treatment that uses specific activities to help people whose physical, particularly movement capabilities that have been damaged, to recover what skills they can to help them lead as normal and independent a life as possible.

PE

Pulmonary embolus (PE) is a clot that has become blocked in the lung, this can be treated with anticoagulation therapy.

Physiotherapy

Treatment that uses physical methods to promote healing, including the use of light, heat, electric current, massage, manipulation and exercise.

Scan

The examination of the body or part of the body, such as the brain, using CT or MRI.

Shunt

A tube which is passed from the inside of the brain to the abdominal cavity, to drain cerebro-spinal fluid (CSF) when the normal route is blocked.

Speech and language therapy (SALT)

Treatment that helps patients whose speech has been affected to speak clearly again.

Stroke

A stroke is a sudden disruption in blood flow to the brain caused by a blockage or bleeding of a blood vessel. Areas of the brain that are affected by the blockage or bleeding can become damaged within minutes.

The effects of a stroke may be mild or severe and temporary or permanent, depending on which brain cells are damaged, how much of the brain is involved, and how quickly the blood supply is restored to the area.

Symptoms of a stroke are sudden and may include:

- Numbness, weakness, or lack of movement (paralysis) in the face, an arm, or a leg, especially on only one side of the body.
- Trouble seeing in one or both eyes.
- Confusion and difficulty speaking.
- Dizziness and a loss of balance or coordination.
- Vomiting.
- A sudden, severe headache.

A person with stroke symptoms needs immediate medical attention to help limit potential damage.

Vasospasm

A sudden contraction of the blood vessels which potentially leads to stroke.

Other organisations that may be able to help**Brain and spine helpline**

Brain and Spine Foundation
7 Winchester House
Cranmer Rd
Kennington Park
London
SW9 6EJ
Telephone: 0808 808 1000
Website: www.brainandspine.org.uk

Brain and Spinal Injury Charity (BASIC)

Neurocare Centre
554 Eccles New Road
Salford
M5 5AP
Telephone: 0870 750 0000
Website: www.basiccharity.org.uk

Citizens Advice Bureau (CAB)

Independent advice on benefits,
employment and debt.
National CAB telephone number: 0207
8332 181
Website: www.citizensadvice.org.uk

Cruse Bereavement Care

Charity offering bereavement
counselling and support.
Helpline: 08701671677
Website:
www.crusebereavementcare.org.uk

Department of Work and Pensions

Government agency responsible for
benefits
Public Enquiries Office: 020 7712 2171
For local offices see telephone book.
Website: www.dwp.gov.uk

DVLA Drivers' Medical Group

Longview Rd
Swansea SA99 1TU
Telephone: 01792 783686 (fitness to
drive)
Website: www.dvla.gov.uk

Headway

Charity offering information and
support for individuals with brain injury.
Free phone helpline: 0808 800 2244
Website: www.headway.org.uk
If you are local to Cambridge we have
our own Headway team in
Addenbrooke's.

National Society for Epilepsy

Chesham Lane
Chalfont St Peter
Buckinghamshire
SL9 0RJ
Telephone: 01494 601 400
Website: www.epilepsynse.org.uk

Speak ability

1 Royal Street
London
SE1 7LL
Telephone: 0808 808 9572
Website: www.speakability.org.uk

Stoke Association

Stroke House
240 City Road
London
EC1V 2PR
Telephone: 0845 363 3100
Website: www.stroke.org.uk



We are currently working towards a smoke free site. Smoking is only permitted in the designated smoking areas.

For advice and support in quitting, contact your GP or the free NHS stop smoking helpline on 0800 169 0 169

Help with this leaflet:



If you would like this information in another language, large print or audio format, please ask the department to contact Patient Information: 01223 216032 or

patient.information@addenbrookes.nhs.uk



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