Patient information from BMJ

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Subarachnoid haemorrhage

Subarachnoid haemorrhage is the medical name for a certain type of bleeding in your head, in the space between your brain and your skull.

Subarachnoid haemorrhage is a medical emergency and can be fatal. But timely treatment saves lives. So if you spot the signs in yourself or someone else, get help fast.

What is subarachnoid haemorrhage?

Subarachnoid haemorrhage is a rare type of stroke. It happens when there is bleeding in the **subarachnoid space** - the area in between the inside of your skull and the surface of your brain.

The haemorrhage (bleeding) often happens when an **aneurysm** bursts. An aneurysm is a bulge in a blood vessel. It happens when a weak place in the blood-vessel wall stretches and fills with blood.

It's not really clear why aneurysms form in some people's heads. But we do know that some things make them more likely, including:

- having close relatives with this type of problem
- smoking
- being older
- having high blood pressure
- being black
- being a woman
- drinking a lot of alcohol over many years
- using cocaine, and
- having certain medical conditions, including Ehlers-Danlos syndrome and polycystic kidney disease.

This might look like a long list, but subarachnoid haemorrhage is not common. But it is vital to act fast if you recognise the signs, as it's often fatal when not treated quickly.

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What are the symptoms?

The main symptom of subarachnoid haemorrhage is a **sudden, very severe headache**. Many people describe it as the worst headache of their life. It is sometimes called a 'thunderclap' headache.

Other symptoms include:

- nausea
- vomiting, and
- extreme sensitivity to light (called photophobia), which can cause pain and discomfort in the eyes.

If you or someone else has symptoms that suggest subarachnoid haemorrhage, call an ambulance straight away.

People with suspected subarachnoid haemorrhage should receive emergency treatment in hospital. Some people who have subarachnoid haemorrhage are awake and can answer questions from the medical team. But some people arrive at hospital unconscious.

The doctor will want to do some tests, including a CT scan to check for bleeding in the brain, and blood tests.

He or she might also want to do a test called a lumbar puncture. It involves taking fluid from your spine with a needle, to be tested for blood. This helps to tell for certain whether there is bleeding in your head.

What treatments are available?

The main treatment for subarachnoid haemorrhage is surgery to **seal the aneurysm** so that it can't bleed any more.

But before that can happen the medical team will need to do some more tests and to make you as stable and comfortable as they can before operating.

For example, you might need:

- help to breathe properly, using a ventilator (a machine that helps you breathe when your lungs are struggling)
- medicine to ease pain while you are waiting for surgery
- medicines to prevent seizures, which can happen after subarachnoid haemorrhage, and which can cause more bleeding if not prevented
- medicine to prevent coughing. Any jolting or jerking movement, such as coughing, could cause more bleeding
- medicine to soften your stools (poo). This is so you won't need to strain when you go to the toilet. Straining could cause more bleeding.

You might also need drugs to help your blood to flow properly. This can involve a balance between two problems that can happen in people with subarachnoid haemorrhage.

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- If you have **coagulopathy**, this means that your blood doesn't clot easily enough, so that it's too 'thin', and you bleed too easily, while
- **vasospasm** means that your blood vessels constrict (tighten up and get too narrow) so that your blood doesn't flow freely enough around your body.

Surgery to repair the aneurysm

If you have surgery for subarachnoid haemorrhage it will usually be done within 72 hours (three days) of you being admitted to hospital.

There are two types of surgery that can repair a burst aneurysm in your head.

- With **surgical clipping** a clip is placed across the neck of the aneurysm so that no more blood can enter it. To do this, the surgeon needs to cut away a small piece of your skull. This is called a **craniotomy**. Once the aneurysm is repaired the piece of skull is replaced and your scalp is stitched up.
- With **coil embolisation** (or just 'coiling') a thin tube called a catheter is inserted into an artery in your groin or leg and up through your blood vessels to where the aneurysm is. Tiny coils made of a metal called titanium are then passed along the coil and into the aneurysm. These coils block up the aneurysm.

It's not really clear whether one of these techniques is better than the other at sealing up aneurysms and stopping them bleeding again.

Some research suggests that coiling works better at preventing bleeding from happening again in the short term, but that in some people the operation needs to be repeated.

If you have coiling you also need to have check-ups from time to time to see if the coils are still doing their job. With clipping, you don't need check-ups.

Coiling might be a better option in people who are not well enough to have a craniotomy.

What will happen?

Treatments for subarachnoid haemorrhage have improved a lot in recent years, but the condition is still fatal in many people.

And many people who survive have complications, which can be permanent. Heart and lung problems are the most common long-term complications.

Younger people and those who are conscious (awake) after a haemorrhage tend to have the best chance of a good recovery. Most people who are in a coma after a haemorrhage will not survive.

Six months after treatment for subarachnoid haemorrhage, 75 in 100 people who were conscious before treatment are still alive.

But up to half of those who survive will have some kind of disability. This can include problems with:

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- memory and thinking clearly
- depression
- quality of life, and
- emotional health.

After treatment, you might need to have a test called an angiography from time to time. This test checks for any problems in your blood vessels.

This test is usually done every 6 to 12 months until your doctor decides it's not needed any more.

More help

Some charities and support groups offer help and information to people who have had a subarachnoid haemorrhage and their loved ones.

For example, in the UK, the Stroke Association (stroke.org.uk) offers a wide range of resources covering treatment, recovery, and local support.

Your treatment team might be able to help you find support where you live. Or you could search online.

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