



# Stroke

**A stroke is an interruption of blood supply to part of the brain. If arteries become blocked, bleed or break, then the brain tissue that was being nourished deteriorates**

## In this article

- Types of stroke
- Effects of stroke
- Treatment
- Recovery and Rehabilitation

## Types of stroke

**Embolism** is where an object, most commonly a blood clot, blocks an artery. These clots can occur in other parts of the body then break up and travel to the brain where they lodge in the brain's smaller blood vessels.

**Thrombosis** is where there is a gradual closure of a blood vessel. In a stroke, it is most commonly fatty lipids called plaques building up on the walls of blood vessels and restricting blood flow. As a result, symptoms usually develop slowly but may be rapid in some cases.

**Haemorrhage** is severe bleeding. Two kinds can cause a stroke. An intracerebral haemorrhage is caused by a ruptured artery leaking blood directly into the brain. A subarachnoid haemorrhage occurs on the surface of the brain, and the blood fills the space around the brain and creates pressure.

## How to recognise a stroke

A stroke is not necessarily a major event, and may not be recognisable as a stroke. It may only result in someone stumbling or having a moment of blankness akin to an absent seizure. It is vital to treat a stroke immediately and call an ambulance.

## FAST

The FAST test is an easy way to recognise and remember the signs of stroke. Using the FAST test involves asking three simple questions:  
Face - Check their face. Has their mouth drooped?  
Arms - Can they lift both arms?  
Speech - Is their speech slurred? Do they understand you?  
Time - Time is critical. If you see any of these signs call an ambulance straight away.

## Effects of stroke

The effects of a stroke vary widely for each stroke patient depending on which part of the brain is affected. Different parts of the brain are responsible for thought processes, comprehension, movement and our senses. The extent of blood shortage also determines the effect of the stroke.

A stroke may generally result in:

- Paralysis,
- Loss of feeling
- Communication difficulties
- Visual problems
- and many other issues depending on which part of the brain is affected:

## Left Hemisphere Effects

A stroke in the left hemisphere of the brain may result in:

- Some degree of paralysis on the body's right side
- Loss of feeling on body's right side
- Right field of vision deterioration

- Loss of speech or comprehension (Aphasia), and other speech problems including Echolalia (exact repetition of a word or sentence just spoken by another person), perseveration (continual repetition of a word or phrase), inappropriate use of "yes" and "no" and inability to discriminate between left and right.
- Inability to name objects that can be recognised and used.
- Inappropriate laughing or crying.
- Easily becoming frustrated.

### Right Hemisphere Effects

A stroke in the right hemisphere of the brain may result in:

- Some paralysis on the body's left side
- Lost or disturbed (hot or cold, acute or diminished pain) feeling on body's left side
- Left field of vision deterioration - may only eat from right hand side of plate.
- Poor judgement, Impulsivity or a lack of awareness of personal limitations.
- Short attention span or difficulty following instructions.
- Difficulty expressing emotions, or inappropriate emotions.
- Inability to read facial expressions or voice tone in other people.
- Difficulty speaking, slurred speech or incessant and repetitive talking.
- Difficulty with simple addition, subtraction, multiplication, division or a simple thought problem.
- Difficulty using money, dialing a telephone or recognizing the time on a clock.
- Spatiotemporal difficulty with a tendency to get lost if left alone or if out of one's environment.

### Brain Stem and Cerebellum Effects

Although the left and right hemispheres of the brain are usually affected, damage in the lower levels of the brain can also occur. The brain stem and cerebellum are involved in maintaining vital body systems, reflexes and balance.

A stroke in the brain stem can cause:

- Unconsciousness
- Inability to speak
- Paralysis
- Unstable pulse
- Blood pressure fluctuations
- Difficulty swallowing or breathing
- Difficulty with eyeball movement.

A stroke in the cerebellum can cause:

- Double vision
- Dizziness and loss of balance
- Lack of coordination in the hands
- Slurred speech.

### Treatment

Surgery, drugs, acute hospital care and rehabilitation, are all accepted stroke treatments depending on the type of stroke.

An example of surgery is a carotid endarterectomy to remove plaque if a neck artery is blocked. Aspirin is a common drug used for thinning the blood. Other medications aim to dissolve clots that lead to stroke. New techniques continue to arise, such as cerebral angioplasty where balloons, stents and coils are used to dilate small intracranial arteries.

### Recovery and Rehabilitation

Generally speaking the brain does not regenerate if brain tissue dies after an embolism or thrombosis. After a haemorrhage the brain may regain some function after the pressure caused by bleeding has decreased.

Recovery after a stroke depends on many factors, including:

- Type and severity of the stroke
- Parts of the brain involved
- Extent and nature of the damage
- Existing medical problems
- Type of treatment and rehabilitation.

Recovery usually involves a lot of relearning of activities such as walking and talking. Relearning can be complicated as many people have trouble concentrating after a stroke. Research funded by the Stroke Association of Queensland found that attention was affected markedly by a stroke in the front right side of the brain. This part of the brain is responsible for attention and concentration and a stroke here was found to lead to slower rehabilitation as learning was impaired.

Rehabilitation aims to:

- Help you understand and adapt to your difficulties
- Regain skills
- Prevent secondary complications
- Help you and your family to come to terms with the stroke.

Knowledge of rehabilitation following a stroke is growing steadily, as neurologists and neuropsychologists experiment with using mirrors or offset treadmills to retrain muscle groups and nerve pathways. As with any other form of brain injury, the key is understanding, persistence and a close relationship with the medical team.

## The Rehabilitation Team

The team involved in rehabilitation can be quite confusing for some patients.

A **physiotherapist** may be involved in assessing and assisting with muscle strength, balance and mobility.

An **occupational therapist** helps with relearning practical tasks of everyday life such as dressing, washing and using cutlery.

A **speech language pathologist** works not only with communication difficulties but also with problems of swallowing.

A **social worker** may assist with counselling and advice about community support, financial issues and other services.

A **Neuropsychologist** may assist with Cognitive changes and problems controlling emotions.

The **rehabilitation doctor's** role is to integrate medical requirements and treatments with the other therapies.