

Physical effects of stroke

Some of the most common effects of stroke are physical. You may experience muscle weakness, paralysis, stiffness, or changes in sensation, usually on one side of your body. These effects can make it harder to move some parts of your body, and you may struggle with everyday activities. This factsheet describes these problems and the different treatment options that are available.

What are the physical effects of stroke?

Muscle weakness

Weakness on one side of the body is the most common and well known effect of stroke. If your muscles are weak, you are likely to have some difficulty moving your limbs and moving around in general.

Around 80% of stroke survivors experience movement problems, but these can vary. You might have a mild weakness in one limb, or part of a limb, and this might limit how well you can move your fingers for example. Some people may have much more severe weakness, and may be unable to move their limbs at all – this is called **paralysis**.

Weakness on one side of the body is often referred to as hemiparesis. Paralysis on one side of the body can be called hemiplegia. If you have weakness or paralysis, you may need help with everyday activities.

If you have **weakness in your leg**, you may be **more likely to slip, trip or fall**. For example, your ankle might turn over when

you put weight on it. You will be more likely to have a fall or other problems with your balance if you also have problems with your vision or hearing. For more information see our factsheet *F22, Balance problems after stroke*.

Drop foot

This is a condition where your toes catch on the ground when you step forward because the muscles that lift your toes (called the dorsiflexors) are weak.

Stamina

Some people find it difficult to keep moving or active for a long time. For instance, you may find that objects slip from your grasp, or you may struggle to use your cutlery towards the end of a meal.

You might also find that despite walking safely at the start of a shopping trip, you become tired and more likely to trip towards the end. Many stroke survivors find that they lose cardiovascular fitness, even if they have little muscle weakness, because they become less active after a stroke. Exercise and stamina training can help you to improve

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your strength, cardiovascular fitness and endurance.

Pain

Pain is another common physical problem. You may feel pain if your stroke has damaged your brain's 'pain centre', or it can be caused indirectly as a result of physical weakness for example. For further information on pain, please see our factsheet *F30, Pain after stroke*.

Spasticity

After your stroke, you may experience changes in muscle tone. Muscle tone is the amount of resistance or tension in your muscles and enables you to hold your body in a particular position. **If your muscle tone has changed you may develop very tight, stiff muscles** (known as spasticity), **or very weak, floppy muscles** (known as flaccidity). As with muscle weakness, changes in muscle tone happen when the area of your brain that controls your muscles is damaged.

Spasticity affects up to a third of stroke survivors. **It always occurs on the weaker side of your body** and may make it difficult to move your limbs.

Contractures

Sometimes stiffness can cause a **permanent shortening of the muscles** – this is called a contracture. This can sometimes happen if you cannot move your limbs fully and regularly, which affects many people after a stroke.

When you aren't moving your limbs regularly, the muscles and soft tissue around your joints can change shape. This can cause

some muscles to change length, becoming shorter or longer. Sometimes, these changes in length can become permanent and the muscle and joints become fixed in position. This can mean that the joint cannot be fully bent or straightened and the muscles cannot be stretched to their full length.

If you have a contracture, your arm might feel and appear stuck in a bent position. If a contracture affects your leg, you might find it difficult to walk. Contractures may also cause your muscles to tense and contract abnormally, causing spasms – these can be painful, especially at night.

Changes in sensation

A stroke can affect your sensation in various ways.

- **Feeling less sensitive** – this is called hypoesthesia. Your limbs may feel numb and this can cause difficulties. For example, if you are unaware of pressure on your skin, such as tight clothing or shoes, they might rub and damage your skin without you noticing. You may also have difficulty eating if your face is numb as you might bite your cheek or tongue without noticing.
- **Feeling less sensitive to temperature.** If you experience this you could be at risk of burning yourself or becoming too cold, so you may need to take extra measures to look after yourself. For example, you might need to carefully test water temperatures with your good hand (for example in the shower or when washing up), or you may need to wear gloves and thick socks in cold weather.

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- **Feeling more sensitive.** This is called hyperesthesia and can affect a range of your senses such as your taste, hearing or touch. After a stroke, some people find watching television or being in crowded places difficult as they seem too loud.
- **Feeling unaware of your position and movement in your limbs.** Your body has a system which makes it aware of its position and movement. Some people have problems with this after a stroke. If this is the case for you, you may have difficulty moving around and you might find that you need to look at your limbs to know where they are. Some people notice that their limbs (or part of them) feel like they do not belong to them, or like they have altered size or shape.
- **Experiencing altered sensations** – this is sometimes called dysesthesia or paresthesia. Common sensations are pins and needles or tingling in your affected limbs. Sometimes these sensations can be unpleasant, such as burning, pressure or feeling like something is running over your skin.

How can the physical effects of stroke be treated?

Everybody recovers differently from stroke and the amount of recovery you will make will depend on many factors, including how much damage was done by the stroke.

Most people will make the most significant improvements in the first few months after their stroke. After this time, recovery usually slows down but can continue for a long time. Many people carry on making improvements and become fitter and stronger for a long time after their stroke.

The timing and amount of therapy you have can help your recovery. Try to begin therapy as soon as you are able to. It is recommended that you should have 45 minutes of therapy (such as physiotherapy or occupational therapy) every day.

Your rehabilitation therapy might be delivered on a one-to-one basis, in a group, or by having exercises to practise on your own or with the help of your family or carers.

Treatment for muscle weakness

If you have any physical effects after your stroke you should see a physiotherapist.

Exercising and practising the activities that you find difficult are good ways to improve. You can try to strengthen your muscles to make them work more efficiently. You can also learn to move and use your muscles in a different way to make up for weak muscles.

Physiotherapy will help to prevent other problems, such as muscle stiffness and spasticity. If you are in hospital, the whole stroke team will be working to keep your muscles supple to avoid stiffness.

A physiotherapist will assess your problems and will recommend suitable exercises and activities for you. There are different types of exercise to increase your strength, stamina and flexibility. Some people may benefit from using a treadmill to practise walking.

As well as giving you exercises, your physiotherapist will help you to practise specific activities such as standing and walking. **Occupational therapists also play an important role in helping you to**

find ways to carry out everyday activities

to help maintain your independence. For example they may make sure that you have any special equipment that you require at home. For further information about these roles, please see our factsheets *F16, Physiotherapy after stroke* and *F17, Occupational therapy after stroke*.

Treatments for drop-foot

Ankle-foot orthosis

There are devices available to give you more support and stability. **An ankle-foot orthosis (AFO) is a type of brace that supports your ankle so that you can support your weight safely.** They can help to improve your walking speed, stability and balance and are commonly used to help with **drop-foot**. Some AFOs are ready made, but may not be suitable if you have more complex problems. In these cases an individually made AFO may be necessary. **AFOs may be available from your physiotherapist**, or you may be referred to an **orthotist**. They will not be suitable for everyone so it is important to check with your doctor, therapist or orthotist first.

Functional electrical stimulation (FES)

FES can also be used to treat drop-foot. It uses **small electrical signals to directly stimulate the weak muscles to work.** These electrical signals replace the nerve impulses that have been interrupted by damage to the brain. Usually electrodes are applied to the skin to deliver electrical stimulation. It is also possible to implant the electrodes directly onto the affected nerve. **Your doctor can refer you to a specialist FES centre or therapist** for assessment and fitting if it is a suitable treatment for you.

Treatments for spasticity, muscle stiffness and contractures

If you have weakness after your stroke you should be assessed for spasticity. There are lots of ways to try to prevent spasticity and contractures. While you are in hospital, your medical team will make sure that you are positioned carefully so that your arms and legs are supported and your muscles are stretched. They will also encourage you to move about as much as possible to make sure that your muscles and joints do not cease up.

Your therapy and nursing team may also do stretches, exercises and massage techniques with you. They will aim to keep your muscles supple to prevent spasticity and contractures from developing.

Unfortunately, these measures will not always be effective, and if you do develop spasticity or contractures after your stroke, **a team of specialists will decide on the best treatment for you.** This may include a combination of physiotherapy, medication and Botox injections.

If you have spasticity **you should have physiotherapy every day** to move your joints. Your physiotherapist will gently place your affected limb into as many different positions as possible. This is called passive stretching and should be taught to your family and carers so that they can help you to practise your exercises. See our factsheet *F16, Physiotherapy after stroke* for more information.

If spasticity affects only one or two specific parts of your body, **you may be given botulinum toxin A (Botox)** as an injection directly into your muscle. Botox works by

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blocking the action of the nerves on the muscle, reducing your muscle's ability to contract. It reduces muscle tone, which can **help you to straighten out your limbs**. The muscle-relaxing effects of Botox usually last for about three months and you should not notice any changes in sensation in your muscles.

You will usually have physiotherapy alongside Botox treatment. You should be assessed three to four months after the treatment and you may be offered further Botox treatments if helpful.

If you find that you are still experiencing muscle stiffness, **you may be prescribed medication to help reduce this** and the pain that often accompanies muscle spasms. There are different types of drugs that you could be given. They all work in slightly different ways, but they all help to relax your muscles. When your muscles are relaxed they can move more easily and you can stretch them further. You may also find that it becomes **easier to straighten or bend your affected limbs**, and you may notice **fewer muscle spasms**.

You will usually be prescribed baclofen or tizanidine first. If these drugs do not work, there are others that may help. This medication should only be prescribed by someone who specialises in managing spasticity.

If you have severe contractures, you may need surgery to lengthen your tendons. Tendons are the bands that connect your muscle to the bone, and lengthening your tendons allows the joint to be stretched out. This procedure is performed under anaesthetic. Surgery is always a last resort.

Treatment for changes in sensation

Unfortunately, there is not much research into how we can improve changes in sensation, and there are not any recommended treatments at the moment. However, **changes in sensation often get better with time**, and these can also sometimes be improved by doing exercises to increase your range of movement. This is because the parts of the brain that control movement and sensation are very closely linked. If your sensations have changed but you still have good movement, you will be taught how to take care of your body and limbs so that you don't injure yourself.

Useful organisations

All organisations are UK wide unless otherwise stated.

Stroke Association

Stroke Helpline: 0303 3033 100

Website: stroke.org.uk

Contact us for information about stroke, emotional support and details of local services and support groups.

The British Association and College of Occupational Therapists (BAOT/COT)

Tel: 020 7357 6480

Website: www.cot.co.uk

The professional body for occupational therapy.

The British Association of Prosthetists and Orthotists

Tel: 0845 166 8490

Website: www.bapo.org

The professional body for Prosthetists and Orthotists in the UK.

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Chartered Society of Physiotherapy

Tel: 020 7306 6666

Website: www.csp.org.uk

The professional body for physiotherapists in the UK. They have a register of therapists who are members of the Association of Chartered Physiotherapists interested in Neurology (ACPIN).

HemiHelp

Helpline: 0845 123 2372 (open from 10am to 1pm, Mon-Fri during term time)

Website: www.hemihelp.org.uk

Supports children and young people with hemiplegia, and their families.

National Clinical Centre for FES

Tel: 01722 439540

Website: www.odstockmedical.com

Offers more information about FES.

Physio First

(formerly Organisation of Chartered Physiotherapists in Private Practice)

Tel: 01604 684 960

Website: www.physiofirst.org.uk

Offers details of private therapists specialising in neurology.

Disclaimer: The Stroke Association provides the details of other organisations for information only. Inclusion in this factsheet does not constitute a recommendation or endorsement.

Produced by the Stroke Association's Information Service.

For sources used, visit stroke.org.uk

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Factsheet 33, version 1

published June 2013

(Next review due March 2015)

Item code: **A01F33**

The Stroke Association is a company limited by guarantee, registered in England and Wales (No 61274).

Registered office: Stroke Association House, 240 City Road, London EC1V 2PR. Registered as a charity in England and Wales (No 211015) and in Scotland (SC037789). Also registered in Northern Ireland (XT33805), Isle of Man (No 945) and Jersey (NPO 369).

Glossary of terms

AFO = ankle-foot orthosis

Contracture = abnormal shortening of a muscle that results in deformity

Drop-foot = the inability to lift the toes and feet properly when walking

Dysesthesia or paresthesia = abnormal and unpleasant sensations

FES = functional electrical stimulation

Hemiparesis = weakness of one part of the body

Hemiplegia = paralysis of one part of the body

Hyperesthesia = an increased sensitivity that can affect a range of senses

Hypoesthesia = a dulled sensitivity to touch

Spasticity = a form of muscle tightening

