

## Visual problems after stroke

Following a stroke, you might experience problems with your vision, but you are not alone. Up to two thirds of people experience some changes to their vision after stroke. This factsheet explains the different types of problems you might experience and how they can be treated. At the end of this factsheet you will also find a list of organisations that offer support and further advice, and a glossary.

Having trouble with your vision can be distressing and it can affect the rest of your recovery. For example, you may not be able to walk confidently if you cannot fully see where you are going. Like other effects of stroke, visual problems do often improve in time as the brain recovers. When this isn't possible, they can be quite difficult to adjust to.

**Problems with vision can sometimes be missed, so if you think you or someone you know has visual problems after a stroke, talk to your doctor.**

You may have had some visual problems before your stroke such as cataracts, age-related macular degeneration, diabetic retinopathy or glaucoma. Also, you may have poor eyesight and need glasses to help you read, or to see long distance.

If you think your vision has become worse, it is important to **have an eye examination** to detect problems that are not related to your stroke so they can be treated. Correcting short sight with glasses or continuing to take eye drops for glaucoma can make a considerable difference to your eyesight.

### How can a stroke affect my vision?

How you are affected depends on exactly where the stroke occurred in your brain. There are four main types of visual problem and you may experience one or more:

- central vision loss
- visual field loss
- eye movement problems
- visual processing problems.

The following sections describe each type.

### Central vision loss

Central vision loss is **the partial or complete loss of vision in one or both of your eyes.**

Occasionally visual problems are due to a stroke affecting the eye only. This is called a **retinal stroke** and happens when there is a blockage in one of the blood vessels to your eye. If you have had a retinal stroke, you may have been aware of some blurring or black-outs of vision in one eye before your stroke.

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However, usually visual problems after a stroke happen because of damage to your brain and not your eye. Central vision loss due to a stroke in the brain usually **affects both eyes**.

### How do I know if I have central vision loss?

You may not be able to see anything at all, or you may only be able to see things around the edge of your vision, but not in the centre.

### How is it treated?

You may be given magnifiers (to increase the size of what you are looking at), minifiers (to help you concentrate on the remaining area of your vision) or anti glare glasses or overlays (to reduce excessive contrast of images and glare).

## Visual field loss

Your visual field is everything you can see – from straight ahead to outwards to the side (periphery).

Visual field loss after a stroke usually affects both eyes. It means that **you are unable to see properly either to the left or to the right** of the centre of your field of vision. Where you experience difficulties is directly related to where the stroke occurred in your brain.

### Types of visual field problems

There are many types of visual field loss, but the most common is a condition where **you can see only the right half or the left half of the world out of each eye**. It is called homonymous hemianopia and affects two thirds of people with visual field loss following stroke. This happens when a stroke occurs at

the back of your brain.

Other types of visual field loss include:

- loss of a quarter of the visual field
- loss of the entire upper or lower field of vision
- patches (scotomas) missing in the field of vision.

### How do I know if I have visual field loss?

You will usually experience loss of your visual field to one side. As a result, it is very common to have problems reading. It can be difficult to locate the start of sentences if you have left-sided field loss, and it's harder to see ahead along the line of text if you have right-sided field loss.

People with hemianopia often have **difficulty reading**. A new free treatment to improve the speed and accuracy of reading is offered on a website called Read Right (see *Useful organisations* section).

### How is it treated?

It is important for an eye specialist to assess your eye problems and advise you on what will work best for you. Here are the three main options:

- **Widening your field of view with optical aids**. This involves using a plastic prism on a pair of glasses. The prism is worn on the side of your field loss (called your blind side). It creates a blurred image from your blind side, which you can see on your good side. This acts as a prompt or cue for you to look towards your blind side.

- **Training in compensatory strategies.** This involves visual scanning training, which encourages you to look to your left and right sides in a systematic way. It is commonly used to help you be more aware of your visual field loss and reminds you to look into your blind side.
- **Visual restorative treatment.** This treatment aims to help you to interpret visual information. It utilises 'blindsight' (if you have it), where you cannot see stationary objects in your blind field of vision but can build up awareness of moving images on that side. There are different forms of this treatment available in different countries but treatment is currently only available privately in the UK with an organisation called Sight Science (see *Useful organisations* section). As with any rehabilitation therapy after stroke, recovery cannot be guaranteed as the extent of the damage caused by a stroke is different for everyone.

At present, there are few studies which compare these different treatment options, so **it is not clear which treatment works best** and who will benefit most from these treatments. Visual scanning training appears to provide the most positive benefit but more research is needed.

### Eye movement problems

A stroke can lead to a variety of problems with the fine nerve control that is needed to move your eyes. We have listed the main ones below:

- **Impaired eye movements.** These may affect your eyes' ability to move from looking at one object to another or to follow a moving object, like someone walking past. These problems can make reading more difficult and can also affect your general mobility. For example if you are unable to look around quickly, walking outside is likely to be more challenging.
- **Inability to move both eyes** up, down, sideways or inwards. If the nerve control to your eye muscles is affected, one of your eyes may not move correctly. This may cause you to have blurred vision or double vision (diplopia). This is sometimes called a squint or strabismus.
- **Your eyes may move constantly.** This means you see objects constantly wobbling which can be very distressing and disorientating. This condition is called nystagmus.
- **Impaired depth perception** and difficulty locating objects. For example, when making a cup of tea, you may misjudge the position of the cup and pour water over its edge rather than into it.

### How are these problems treated?

There are various treatment options. **Exercises** can help if you have difficulty moving your eyes to look at objects held close to your face. **Prisms** can join double vision or displace vision if you are unable to look to one side. Prisms are optical devices. They adjust how you see objects. So for example if you have double vision, the prism will move the second image you see onto the first, so you only see one.

A **patch** over one eye can also be used to avoid troublesome double vision. However, a patch means you can only use one eye (monocular vision), which can also cause some difficulty. You can choose which option works best for you.

### Visual processing problems

When we look at something, our eyes receive visual information which must then be processed by our brain to find out what it means. This enables us to recognise colours, someone we know, or familiar objects, for example, but this process can be affected by stroke.

You may also experience a change in your awareness and perception of the world around you. This is called **visual neglect** and is the most common visual processing problem. It is more common in people who have had a stroke affecting the left side of their body.

Visual neglect is a disorder which can reduce your ability to look, listen or make movements towards one half of your environment. **You may be unaware of objects and people on your affected side** and may ignore people or bump into things without realising they are there.

**Visual hallucinations** are quite common after a sudden loss of vision and can be very distressing. Identifying these and understanding their cause can be reassuring. For many people, this improves in time.

#### How are visual processing problems treated?

If you have problems such as difficulty recognising colours, faces, objects, complex scenes or text, it is important to use **adaptive strategies**. These involve using your other senses (for example touch or hearing) to process the information in a different way and to help you to relearn how to recognise things or adapt to your difficulties. Prisms, patches and mirrors have

been tried to improve people's awareness of visual neglect but with limited success.

Fortunately, many people recover well from visual neglect. However it is important that your healthcare professionals and carers work with you to help you become more aware of your affected side.

### Other eye problems

You may experience some other eye difficulties after a stroke. If you have **weakness in your facial muscles** and eyelid muscles, you may have difficulty closing one eye. This can lead to a dry eye and irritation. It is important that this is treated early with lubrication drops or ointment to prevent more serious eye complications such as ulcers.

You could also be more **sensitive to light** (called photophobia) and may benefit from tinted glasses or sunglasses.

### What help is available?

- An **orthoptist** is an eye care specialist who can assess and treat a range of eye problems, particularly problems with eye movements.
- An **ophthalmologist** is a medical doctor who specialises in diagnosing and treating diseases of the eye.
- An **optometrist** (optician) is an eye care specialist who tests sight, prescribes and dispenses glasses or contact lenses and can screen you for eye disease.

**Support workers, visual rehabilitation officers (VROs) and eye clinic liaison officers (ECLOs)** can provide additional

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support. They can provide you and your carer (if you have one) with information on practical aids and emotional support.

Eye clinic liaison officers provide a bridge between the eye care professionals in hospital and other organisations that can provide you with support at home. Visual rehabilitation officers can help you make use of your remaining vision and other skills to help you to adapt to your visual impairment.

**Procedures for seeing a specialist vary across the UK.** If you are in hospital, you should be referred to an orthoptist or ophthalmologist specialising in stroke and brain injury. They can assess you and arrange any treatment for poor vision, double vision or visual field loss. You may then be referred to a low vision clinic where you can receive an assessment and advice on using magnifiers or other visual aids.

If you are at home, your GP or local optician can refer you to one of these specialists. It is best to see an optician first, so they can establish if you have any other sight problems. If you wear glasses, they can make sure that they allow you the best possible vision under the circumstances. Your optician may then write to your GP who can refer you to the hospital eye department for a specialist assessment.

If you have visual problems, there is a **wide range of specialist equipment and household items available to help**. These include clocks and watches with large numbers, big button telephones, and large print books and calendars. Contact the RNIB or the Disabled Living Foundation for more information (see the *Useful organisations* section at the end of this factsheet).

## Will I be able to drive again?

One of the most common queries after a stroke is whether you can return to driving. The DVLA/DVA states that after a stroke you cannot drive for one month, but you may return to driving after this time if there are no lasting effects.

The DVLA/DVA state that **you cannot drive with double vision, blurred vision below a certain level or visual field loss, particularly one which interferes with central vision.**

So it is important to have a proper assessment of your visual problems so that you receive an accurate diagnosis. This can take place in a hospital eye department. You should be given clear information about your condition and offered treatment if it is appropriate, which may help improve your vision to the level needed for driving.

If you have visual problems in the longer term after stroke, you can get further advice about adapting to the effects and to see whether returning to driving may be an option. For more general information about driving see our factsheet *F2, Driving after stroke*.

## Should I register my sight loss?

Registering your sight loss can make it **easier to get practical help** from social services. You can also benefit from **concessions** such as the Disabled Person's Railcard and local travel schemes. If you choose to register your sight loss, an ophthalmologist can assess whether you qualify for registration as sight impaired (partially sighted) or severely sight impaired (blind). The RNIB has more information on the benefits of registering

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your sight loss and how to do it (see the *Useful organisations* section).

### Tips for coping with visual problems

- If you have double vision, try closing one eye or using a patch when reading or watching television.
- If you have lost your vision to one side, it is important to constantly move your eyes and head towards the weaker side. The more you scan and move your eyes and head to that side, the quicker you will detect objects on that side and reduce your risk of bumping into objects or tripping.
- When reading, use rulers and markers to highlight the beginning and end of sentences and to help you keep your position along a line of text.
- Make sure your lighting is good and, where possible, have it positioned to your side and not behind you, as this causes shadows.
- Reduce the number of objects that are on your surfaces at home, particularly in the kitchen. If there is too much clutter, it can be more difficult to pick out individual items.

### Useful organisations

All organisations listed are UK wide unless otherwise stated.

#### **Stroke Association**

**Stroke Helpline:** 0303 3033 100

**Email:** [info@stroke.org.uk](mailto:info@stroke.org.uk)

**Website:** [stroke.org.uk](http://stroke.org.uk)

Contact us for information about stroke, emotional support and details of local services and support groups. Our online *Strokeshop*, in association with Homecare, has a range of daily living products for people with visual problems (see our website for details).

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

**Helpline:** 0303 123 9999

**Website:** [www.rnib.org.uk](http://www.rnib.org.uk)

Provides information about all aspects of visual impairment, including low vision aids and the process of being registered as partially sighted or blind. Offers an emotional support service and over 100 social groups which meet weekly. They can also provide details of transcription services.

Other services include **Big Print** – a weekly large print newspaper which includes TV and radio listings, a **National Library Service** – a specialist library including audiobooks for people with sight loss, and **Insight radio** – a station for people with visual problems with a wide range of programmes including discussions about the Sunday newspapers and features on books.

#### **Action for Blind People**

**Helpline:** 0303 123 9999

**Website:** [www.actionforblindpeople.org.uk](http://www.actionforblindpeople.org.uk)

Part of the RNIB. Local teams specialise in providing information and support on employment issues, welfare rights, housing and assistive technology. Also offers a mobile sight loss information service.

#### **Nystagmus Network**

**Tel:** 0845 634 2630

**Website:** [www.nystagmusnet.org](http://www.nystagmusnet.org)

Produces publications including *Understanding nystagmus*, *Nystagmus*



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### **One Vision**

**Tel:** 0845 108 3161

**Website:** [www.one-vision.org.uk](http://www.one-vision.org.uk)

A charity dedicated to helping people with sight loss in one eye.

### **Partially Sighted Society**

**Tel:** 0844 477 4966

**Email:** [info@partights.org.uk](mailto:info@partights.org.uk)

**Website:** [www.partights.org.uk](http://www.partights.org.uk)

Offers a catalogue of resources including easy-to-see and talking clocks, watches and timers; large playing cards; large print games, crossword books, calendars and diaries; large piece jigsaws, bold-lined stationery and Magnascreen for TVs and computer monitors. Also offers publications such as *Visual problems and stroke*, *Obtaining magnifiers* and *Seeing things that aren't there*.

### **Read Right**

**Website:** [www.readright.ucl.ac.uk](http://www.readright.ucl.ac.uk)

A website from University College London Institute of Neurology. Provides free therapy you can download to help people with difficulty reading because they have lost vision to one side – a condition called hemianopic alexia.

### **Sight Science**

**Tel:** 07842 106 131

**Email:** [info@sightscience.com](mailto:info@sightscience.com)

**Website:** [www.sightscience.com](http://www.sightscience.com)

Sight Science provides a programme of Neuro-eye Therapy (NeET), a type of visual restorative treatment. It involves an interactive computer-based therapy for people with visual field loss after stroke.

### **The Disabled Living Foundation (DLF)**

**National Helpline:** 0845 130 9177

**Email:** [helpline@dlf.org.uk](mailto:helpline@dlf.org.uk)

**Website:** [www.dlf.org.uk](http://www.dlf.org.uk)

Provides information about aids and equipment for people with disabilities.

**Visionary** – linking local sight loss charities

**Tel:** 020 8417 0942

**Website:** [www.visionary.org.uk](http://www.visionary.org.uk)

UK network of local charities for blind and partially sighted people, which are listed on their website.

### **Audio books**

#### **Calibre**

**Tel:** 01296 432 339

**Website:** [www.calibre.org.uk](http://www.calibre.org.uk)

Free postal lending library of unabridged books, recorded in various formats.

Membership is open to children and adults who are blind, partially sighted and print disabled.

#### **Listening Books**

**Tel:** 020 7407 9417

**Email:** [info@listening-books.org.uk](mailto:info@listening-books.org.uk)

**Website:** [www.listening-books.org.uk](http://www.listening-books.org.uk)

A postal audio library service. Annual membership starts from £20. This fee may be paid by social services or your local authority.

#### **National Talking Newspapers and Magazines (TNAUK)**

**Tel:** 01435 866 102

**Email:** [info@tnauk.org.uk](mailto:info@tnauk.org.uk)

**Website:** [www.tnauk.org.uk](http://www.tnauk.org.uk)

National charity that records more than 200 national newspapers and magazines in various different formats.

#### **Playback Recording Service**

**Email:** [info@play-back.org.uk](mailto:info@play-back.org.uk)

**Website:** [www.play-back.com](http://www.play-back.com)

Provides a free service transcribing text to

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audio format for people with visual problems. Also has a wide range of publications in audio format that you can borrow.

### Professional bodies

#### **British and Irish Orthoptic Society**

**Tel:** 01353 665541

**Email:** membership@orthoptics.org.uk

**Website:** www.orthoptics.org.uk

Provides information on the eye problems that occur following brain injury, including stroke. They have a stroke specialist interest group and support research on visual impairment following stroke.

#### **Royal College of Ophthalmologists**

**Tel:** 020 7935 0702

**Website:** www.rcophth.ac.uk

Professional body for eye doctors. Offers a range of information on eye conditions.

#### **The College of Optometrists**

**Tel:** 020 7839 6000

**Email:** optometry@college-optometrists.org

**Website:** www.college-optometrists.org

Professional body for optometrists in the UK.

### Driving organisations

#### **Driver and Vehicle Licensing Agency (DVLA) England, Scotland, Wales**

**Tel:** 0300 790 6806

**Email:** eftd@dvla.gsi.gov.uk

**Website:** www.dvla.gov.uk

Produces a *Customer Service Guide for Drivers with Medical Conditions* and an *At a Glance Guide to the Current Medical Standards of Fitness to Drive*.

#### **Driver and Vehicle Agency (DVA)**

**Northern Ireland**

**Tel:** 0845 402 4000

**Email:** dvlni@doeni.gov.uk

**Website:** www.dvlni.gov.uk

The driver, vehicle and vehicle operator licensing authority in Northern Ireland.

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



## Glossary of terms

**Depth perception** = the ability to see the world in three dimensions.

**Hemianopia** = loss of vision in one side.

**Homonymous hemianopia** = seeing only the right half or the left half of the world out of each eye.

**Monocular vision** = vision with one eye only.

**Nystagmus** = a condition where the eyes move constantly.

**Ophthalmologist** = a medical doctor specialising in diagnosing and treating diseases of the eye.

**Optometrist (optician)** = a specialist who tests sight, prescribes glasses and contact lenses, and screens people for eye disease.

**Orthoptist** = an eye care specialist who assesses and treats a range of visual problems, particularly eye movement problems.

**Peripheral vision** = the field of vision out to both sides.

**Prism** = plastic membrane which is applied to a person's glasses and which moves the position of objects when they are seen through the prism.

**Retinal stroke** = a blockage in a blood vessel to the eye.

**Visual field** = the whole of your vision from straight ahead to outwards to the sides.

**Visual scanning** = training which encourages you to look in a systematic way to the right and left sides.

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For sources used, visit [stroke.org.uk](http://stroke.org.uk)

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