Visual problems are common after a stroke and can affect up to two thirds of stroke survivors. There are several different types of visual difficulties and these can vary from slight to more severe, but there is a lot of help and support available. This factsheet explains the different types of visual problems that can occur after a stroke and the treatments or strategies for coping that are available. It also lists organisations that offer further advice.

Visual problems are common after a stroke and sometimes they occur without any other disability being present. Like other after-effects of stroke, visual problems often resolve themselves in time as the brain recovers, although where recovery doesn’t happen, they can be quite difficult to adjust to. If a person is having trouble with vision, this can affect the rest of their rehabilitation – for example moving around could become more difficult. 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.

Of course some visual problems may have existed prior to your stroke, for example ocular disease such as cataract, age-related macular degeneration, diabetic retinopathy or glaucoma. Also, you may have poor eyesight because you need glasses to correct long or short sight.

It is therefore important that if you have any vision loss, you should have an eye examination to detect non-stroke-related visual problems so they can be treated. This can make a considerable difference to eyesight, for example correcting short sight with glasses or continuing to take eye drops for glaucoma.

What are the visual problems than can happen after stroke?

Visual disturbance after a stroke falls into several categories, depending on exactly where in the brain the stroke occurred. These categories include:

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

You could experience one or several of the above types of visual problems.
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 known as retinal stroke and occurs because of a blockage of one of the blood vessels to the eye. If you have had a retinal stroke, you may have been aware of intermittent blurring or black-outs of vision in one eye before your stroke.

However, most commonly, visual problems occur after a stroke which involves the brain because of a blockage in an artery leading to the brain (an ischaemic stroke) or because of bleeding from one of the blood vessels in or around the brain (a haemorrhagic stroke). Visual problems caused by a stroke are a result of brain damage and not direct damage to the eye. Central vision loss due to a stroke in the brain usually affects both eyes.

Visual field loss

The visual field is a term most commonly used to describe the whole of what 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 linked to the where the stroke occurred in your brain. The extent of the problem can be shown by measuring your visual field.

Types of visual field problems

There are many types of visual field loss but the most common is homonymous hemianopia, which accounts for two thirds of visual field loss following stroke. The word hemianopia means ‘without half-vision’ and this means you can see only the right half or the left half of the world out of each eye. This happens when the stroke occurs at the very back of the brain.

Other types of visual field 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.

What are the symptoms of visual field loss?

Symptoms are a loss of visual field, usually to one side. You may have difficulty with reading which is a very common problem as it can be difficult to locate the start of sentences with left-sided field loss. Where there is right-sided field loss, reading may be more difficult because you may not be able to see ahead along the line of text. Using markers or rulers can highlight the beginning and end of sentences and help tracking across a line of text.

What are the treatments for visual loss?

Treatments for central visual loss

Treatment of central visual loss can include using magnifiers to increase the size of what is being viewed, minifiers to concentrate solely on the remaining area of retained vision and anti glare glasses or overlays to reduce excessive contrast of images and glare.

Treatments for peripheral visual field loss

Treatment of peripheral visual field loss comes under three options. It is important
for an eye specialist to assess your eye problems and give you individual advice and treatment:

- **Widening the field of view** with optical aids. This can be achieved using a plastic stick on **prism on glasses** to the side of the field loss. The prism creates a blurred image from the blind side which is seen superimposed on your clear vision and thus acts as a **prompt** or cue to look towards the blind side.

- **Training in compensatory strategies** is commonly used to **improve awareness** of the visual field loss and promote eye and head scanning into the blind side.

- **Visual restorative treatment** aims to **develop and use alternative brain pathways** for visual information in the brain. This utilises ‘blindsight’ (if present), where you **cannot see stationary objects** in the 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). 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 **unclear** which treatment is more beneficial and which patients find no benefit from these treatments. **Further research** using randomised control trials is planned to try to address these issues.

### Eye movement problems

Eye movement problems after stroke are due to **interruption** of the **nerve control** for creating eye movements. Problems can include:

- **Impaired eye movements** – these may affect your eyes’ ability to move from one object to another or to follow a moving object. These can impede **reading** but also general **mobility**, for example if you are unable to look around quickly.

- **Inability to move both eyes up, down or sideways**. Where nerve control to the eye muscles is involved, **one eye may not move correctly** in one or more directions and you may have **blurred vision** or **double vision** (diplopia) because of the resultant turn of that eye (squint/strabismus).

- **Nystagmus**, which is where the eyes **constantly move**. You see objects constantly wobbling which can be very distressing and disorientating.

- **Impaired depth perception** and difficulty locating objects for example misjudging the position of a cup and pouring water over its edge rather than into it, or over-reaching for an object.

### What are the treatments for eye movement problems?

There are a number of treatment options for eye movement problems. **Exercises** can improve eye movements where there is difficulty moving the eyes to look at objects held close to the face. **Prisms** can join
double vision or displace vision if you are unable to look to one side. A patch can also be used to eliminate troublesome double vision. However, a patch means you can only use one eye (monocular vision) which can also cause some difficulty. You must chose which option works best for you.

Visual processing problems

Visual information received from the eyes must then be processed by the brain to establish what it represents. For example recognising colours, someone you know, or the movement of objects. This can be affected after a stroke.

With visual processing problems, such as inability to recognise colours, faces, objects, complex scenes or text, it is important to use adaptive strategies such as using other senses (for example touch or hearing) to process the information in a different way and relearn or adapt visual recognition.

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 the 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. Fortunately there is frequently good recovery from visual neglect. However, where it is present, continued input from health care professionals and carers is important to promote awareness of the affected side. Prisms, patches, occlusions and mirrors have been used on glasses to improve awareness in visual neglect but with limited success.

Visual hallucinations are quite common after a sudden loss of vision and can be very distressing. Identifying these and explaining their cause can be very reassuring.

Other eye problems

After a stroke there are a number of other difficulties you may experience in direct relation to the eye. Weakness of the face muscles and eye lid muscles can result in difficulty closing one eye. This can lead to dry eye and irritation and 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 photophobic (have increased sensitivity to light) and may benefit from tinted glasses or sunglasses.

Vision and driving

One of the most common queries after a stroke is whether you can return to driving. The DVLA/DVA states that you may return to driving after one month where there is no lasting deficit of function. Function does not only mean general mobility with full use of arms and legs, but visual function also.

The DVLA/DVA states that individuals cannot drive with double vision, blurred vision below a certain level or visual field loss, particularly that which interferes with central vision. Thus, assessment and
diagnosis of potential visual problems causing these problems is important so that accurate diagnosis is made, full and clear information can be given to you and treatment can be given if possible, which may help return your visual function to driving standards.

Where longstanding visual problems exist following stroke, further advice can be given regarding adaptation to the deficit and whether returning to driving may be an option. These assessments can be conducted in a hospital eye department. For more general information about driving please see our factsheet F02 Driving after stroke.

Which specialists can help with visual problems?

- An orthoptist is an eye care specialist whose role involves assessing and treating patients with a range of eye problems but particularly problems with eye movements and related impairment of vision.

- An ophthalmologist is a medical doctor specialising in the diagnosis and treatment of diseases of the eye.

- An optometrist (optician) is an eye care specialist who tests sight, prescribes and dispenses glasses or contact lenses and screens for eye disease.

Additional support is given by support workers, visual rehabilitation officers (VROs) and eye clinic liaison officers (ECLOs). These individuals work within eye clinics (ECLOs) or the sensory teams in social services (VROs) to provide direct information to stroke survivors and carers relating to practical aids and emotional support. ECLOs provide a bridge between the eye care professions within the hospital and other organisations that can provide support at home. VROs help individuals to make use of their remaining vision and utilise other skills to adapt to their visual impairment.

Procedures for referral to specialists vary greatly across the UK. If you are in hospital, you should be referred to an orthoptist or ophthalmologist specialising in stroke and brain injury who can arrange assessment and 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 optometrist can refer you to one of these specialists. It is advisable, if at home, to see an optician who can at least establish that there are no other sight problems relating to the eye, or take into account pre-existing eyesight difficulties. They can make sure that your spectacles are the best possible under the circumstances. The optician may write to the GP who can make a referral to the hospital eye department for more specialist assessment.

Information about equipment and household items for people with impaired vision can be obtained from the RNIB or from the Disabled Living Foundation (see the ‘Useful organisations’ section at the end of this factsheet).

Registering your sight loss

Registering your sight loss can make it easier to get practical help from social
services, as well as entitling you to other 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 (see ‘Useful organisations’) has more information on the process and benefits of registering your sight loss.

**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 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 help keep your position along a line of text.
- Use good lighting which should be positioned to your side but not behind you, as this causes shadows.
- Minimise the number of objects that are on surfaces and particularly in the kitchen. If there is too much clutter on surfaces, it can be difficult to pick out individual items and this can cause confusion.

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**Useful organisations**

All organisations listed are UK wide unless otherwise stated.

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

Helpline: 0303 123 9999,
Website: 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 tele-befriending social groups meeting weekly. Also provides details of transcription services.

- **England**, 105 Judd Street, London WC1H 9NE, tel: 020 7388 1266
- **Northern Ireland**, 40 Linenhall Street, Belfast BT2 8BA, tel: 028 9032 9373
- **Scotland**, 12–14 Hillside Crescent, Edinburgh EH7 5EA, tel: 0131 652 3140
- **Wales**, Trident Court, East Moors Road, Cardiff CF24 5TD, tel: 029 2045 0440.

**RNIB National Library Service**

PO Box 173, Peterborough PE2 6WS
Helpline: 0303 123 9999,
Website: www.rnib.org.uk
Email: library@rnib.org.uk
Specialist library, including talking books, for readers with sight loss in the UK.

**RNIB Big Print**

Customer services, PO Box 173, Peterborough PE2 6WS
Helpline: 0303 123 9999,
Website: www.rnib.org.uk
Email: shop@rnib.org.uk
Offers a weekly newspaper (including TV and radio listings) for those with sight difficulties.
**Action for Blind People**  
14–16 Verney Road,  
London SE16 3DZ  
Helpline: 0303 123 9999  
Website: www.actionforblindpeople.org.uk  
Part of the RNIB. Local teams specialise in providing information and support with employment issues, welfare rights, housing and assistive technology. Also offers a mobile sight loss information service.

**Visionary**  
PO Box 178,  
Retford DN22 1DL  
Tel: 01777 705 299  
Website: www.visionary.org.uk  
UK network of local charities for blind and partially sighted people, which are listed on their website.

**Nystagmus Network**  
Tel: 0845 634 2630  
Website: www.nystagmusnet.org  
Email: john.sanders@nystagmusnet.org  
Produce publications including *Understanding nystagmus, Nystagmus and driving in the UK* and *Computers and nystagmus*.

**One Vision**  
Wardington Court, Welford Road,  
Northampton NN2 8AG  
Tel: 0845 108 3161  
Website: www.one-vision.org.uk  
A charity dedicated to helping people through sight loss in one eye and learning to live with monocular vision.

**Partially Sighted Society**  
7/9 Bennetthorpe,  
Doncaster DN2 6AA  
Tel: 0844 477 4966  
Website: www.partssight.org.uk  
Email: info@partsight.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 TV’s and computer monitors. Also offers publications such as *Visual problems and stroke, Obtaining magnifiers* and *Seeing things that aren’t there*.

**Sight Science Limited**  
William Guild Building, King’s College, University of Aberdeen, Aberdeen AB24 3FX  
Tel: 07842 106 131  
Website: www.sightscience.com  
Email: info@sightscience.com  
Sight Science provides a program of Neuro-eye Therapy (NeET) involving an interactive computer-based therapy for people with vision loss after stroke.

**The Disabled Living Foundation (DLF)**  
380–384 Harrow Road,  
London W9 2HU  
National Helpline: 0845 130 9177  
Website: www.dlf.org.uk  
Email: helpline@dlf.org.uk  
Provides information about aids and equipment for people with disabilities.

**Driver and Vehicle Licensing Agency (DVLA) Drivers Medical Group**  
(England, Scotland, Wales)  
Drivers Medical Group, DVLA, Swansea SA99 1TU  
Tel: 0300 790 6806  
Website: www.dvla.gov.uk  
Email: eftd@dvla.gsi.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
Northern Ireland
DVA Medical Section, Driver Licensing,
County Hall, Castlerock Road,
Coleraine BT51 3TB
Tel: 0845 402 4000
Website: www.dvlni.gov.uk
Email: dvlni@doeni.gov.uk
The sole driver, vehicle and vehicle operator licensing authority in Northern Ireland.

Calibre
Calibre Audio Library,
Aylesbury,
Bucks HP22 5XQ
Tel: 01296 432 339
Website: www.calibre.org.uk
Free postal lending library of unabridged books, recorded on standard audio cassettes. Membership is open to children and adults who are blind, partially sighted and print disabled.

Listening Books
12 Lant Street,
London SE1 1QH
Tel: 020 7407 9417
Website: www.listening-books.org.uk
Email: info@listening-books.org.uk
A postal audio library service. Annual membership starts from £20. This fee may be paid by social services/local authority.

Playback Recording Service
Centre for Sensory Impaired
7 Gullane Street,
Glasgow G11 6AH
Tel: 0141 334 2983
Website: www.play-back.com
Comprehensive recording service providing a newspaper and magazine reading service and tape library.

National Talking Newspapers and Magazines
National Recording Centre,
Heathfield, East Sussex TN21 8DB
Tel: 01435 866 102
Website: www.tnauk.org.uk
Email: info@tnauk.org.uk
National charity that records more than 185 national newspapers and magazines on to audio CD. Some publications are also available by email.

British and Irish Orthoptic Society
c/o The Chartered Society of Physiotherapists,
14 Bedford Row, London WC1R 4ED
Tel: 020 7306 1135
Website: www.orthoptics.org.uk
Provides information on the eye problems that occur following acquired brain injury, including stroke. They have a stroke specialist interest group and actively support research on visual impairment after stroke.

Royal College of Ophthalmologists
17 Cornwall Terrace, London NW1 4QW
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
42 Craven Street
London WC2N 5NG
Tel: 020 7839 6000
Website: www.college-optometrists.org
Professional body for optometrists in the UK.

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 specializing in diagnosing and treating diseases of the eye

Optometrist (optician) = 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 impairment = term used to describe vision loss resulting in a significant limitation of visual capability. Can be caused by poor central or peripheral vision or eye movement problems

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