Chest Heart & Stroke Scotland

VISION AFTER STROKE

ESSENTIAL GUIDE

This Essential Guide is about vision problems after a stroke.

It explains:

- How a stroke can affect your vision.
- How to manage vision changes after a stroke.
- What support is available if your vision has been damaged by a stroke.

How does a stroke affect vision?

A stroke damages parts of your brain. If it affects the parts of your brain that control your sight, this can cause changes to your vision.

Around **two out of every three people** who have a stroke experience some kind of visual change as a result.

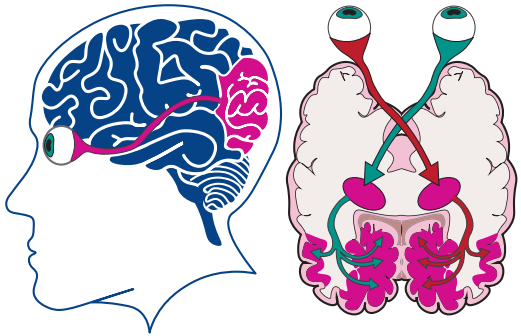
It is important to remember that visual changes after a stroke are caused by **damage to the brain, not damage to the eyes.**

Because of this, glasses and contact lenses may not be as helpful as you might expect.

Vision and the brain

When you see something, the light that comes in through the eyes is transferred into a neurological signal.

The signal travels through the **optic nerves** to the **visual cortex** at the back of the brain. The visual cortex makes sense of the signal, and decides which parts of the things you see it should focus on.



Damage to any part of this pathway can cause issues with your sight.

How a stroke affects the brain

When you have a stroke, it leads to parts of your brain being starved of blood. This means that the nerves in those parts of the brain cannot get oxygen or nutrients.

As time goes on, the nerve cells start to die off. This can include your optic nerves or the nerves in your visual processing centres. It could also include the parts of your brain which control your facial muscles, including the ones that move your eyelids and eyeballs, and the muscles in your tear ducts.

Your stroke's symptoms will depend on which parts of the brain are affected, and how long it took for normal blood flow to be restored.

Potential visual symptoms - such as visual field loss, double vision, or hallucinations - will be explored in more detail throughout this booklet.

Visual warning signs of stroke

A TIA (transient ischaemic attack or "mini stroke") happens when bloodflow to the brain is disrupted for a short period of time, then returns to normal. If the TIA affects parts of your brain or eye which are involved in vision, you may find that you have visual symptoms of a stroke for up to a day, which then get better quickly.

If the TIA only affects the eye, this is called **amaurosis fugax**. Amaurosis fugax is usually experienced as a "shutter" coming down over your vision on one side.

TIA (and to a lesser extent amaurosis fugax) is a warning sign that you may be at high risk of a larger stroke.

If you experience any of the symptoms in this booklet, even for a short time, call 999 or visit your local A&E.

Visual checks after stroke

Following a stroke, the main focus is on assessment and rehabilitation. The stroke team, GP, or ophthalmologist can refer you to an **orthoptist** and/or **low vision specialist.**

Changes to your vision might be missed or misunderstood, so be sure your team know what your vision was like before your stroke.

Many people find that their vision improves in the time after their stroke. However, the level of improvement will depend on where the damage to your brain is, how severe it is, and any existing health problems.

Unfortunately, for many people - especially those with visual field loss - their sight loss is permanent. If this is the case, there may be different management options available to you to help you adapt to your sight.

Visual field loss

Your **visual field** is the area you see in front of you and to the side. After a stroke, you may find that less of this area is visible than usual, a condition called **visual field loss**.

Most often, this means that you lose the left side of your vision (**hemianopia**). As nerves from each eye travel together in the brain, this usually affects both eyes. This can also, less frequently, happen on the right side.

However, there are other types of visual field loss, like **scotoma** (blank patches in your vision) or **quadrantanopia** (a quarter of your visual field lost in both eyes.

Your visual field loss can affect your ability to see objects at the sides, away from your central line of sight.

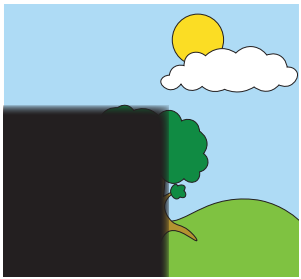
The type of visual field loss will depend on the area of your brain affected by stroke.

No visual field loss:

Hemianopia:

Scotoma:

Quadrantanopia:



Other people may notice the change in your vision before you. You may bump into things, or have difficulty reading or seeing the world around you. A full assessment of your visual field is needed to diagnose visual field loss.

Managing hemianopia

You can use a marker, ruler or post-it note to indicate the beginning or end of a line. It may also help to tilt the text. A typoscope (a piece of card with a rectangle box cut out) or a bar magnifier (a long thin magnifier with a guideline on it) can also make it easier to focus on one line of text at a time.

Scanning techniques (specific patterns of eye movement) can improve your reading. Keep your head still and look around, focusing on your affected side of vision. To practice, keep your head still and move your eyes around the room towards your affected side of vision.

Online training programmes for this include:

- **Eye-Search:** eye-search.co.uk
- **Read-Right:** www.readright.ucl.ac.uk
- **Durham Reading and Exploration Training (DREX):** www.durham.ac.uk/departments/academic/psychology/research/services/drex/

Optical aids may also be used to help increase your field of view. These must be fitted by an eye care professional:

- **Prisms or Peli lenses** to redirect the image from the side with visual field loss onto the other side of your vision.

  Many people experience headaches and confused visual images when using these types of prisms, and not everyone will be able to adapt to them.

- **Hemianopic spectacles** are small mirrors attached to spectacles.

- An **inverted telescope** can also increase your visual field, but it does require you to have good central vision.

None of the techniques and aids can help to bring back any visual field that you've lost but may help you get the most out of the field of vision you have. They don't work for everyone and training is needed to make sure you can use them safely and comfortably.

Visual neglect

A stroke affecting the visual cortex can damage **visual processing**. This might mean, for example, that you have trouble recognising things or people.

The most common form of visual processing issue is called **visual neglect.** This means that you can see everything in your visual field, but your brain only pays attention to things on one side of your visual field.

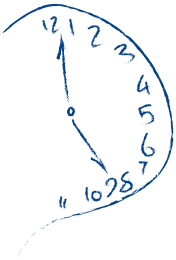
This can lead to a condition called **visual inattention,** where people ignore the affected side of their body and anything on that side (usually the left).

For example, you might shave or apply makeup on only one side of your face, or only eatwhat is on one side of your plate.

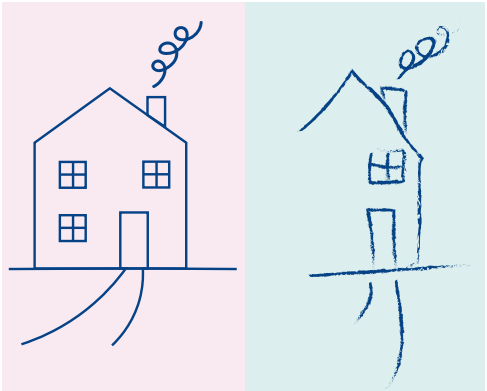
Visual neglect can exist alongside visual field loss, or on its own.

One way to test for visual neglect is by asking you to draw a clock.

People with visual neglect may draw only half the image, and/or put all the numbers on one side, as in this illustration:



You might also be asked to copy an image. People with visual neglect will only draw the elements on one side of the image.



Managing visual neglect

Treatment for neglect can include prisms, but most often you will be given scanning and awareness strategies to help you cope.

There are also **free visual scanning training programmes** online which can be helpful if you are experiencing visual field loss, visual neglect, or hemianopia:

- **Eye-Search**
  www.eyesearch.co.uk
- **Read-Right**
  www.readright.ucl.ac.uk
- **Durham Reading and Exploration Training (DREX)**
  www.durham.ac.uk/departments/academic/psychology/research/services/drex/

Unfortunately, if you have both visual field loss and neglect, you are less likely to be able to respond to scanning techniques or compensate for the problem.

Eye movement

A stroke can affect the nerves which control eye movements, leading to problems with:

Saccadic eye movements. These are very fast, reflexive eye movements where your eye jumps from one point of focus to another. After a stroke, you may be unable to shift focus quickly, or you may find that your eyes move uncontrollably (**nstygmus**).

"Smooth pursuit" eye movements, which allow you to follow moving objects. After a stroke, you may have difficulty watching something or someone as they move.

Squint, technically called **strabismus**, where one eye is turned in or out.

Focus and concentration can also be affected by your eye movements, as it makes visual tasks more difficult.

These problems can make it difficult to walk around easily, read, or look around a room.

Double vision

Double vision (**diplopia**) happens when the nerves that control eye movements are damaged from a stroke. Double vision is where you see two images of the same object one on top of the other or side by side or a combination of both.

This can make you feel dizzy and sick and can make you lose your balance. It can also make some activities difficult or unsafe. For example, when making a cup of tea, you may miss pouring water into your cup because you see two of them.

Using prisms or occlusion can allow double images to be seen as a single image. Some people may experience headaches or confused vision at first when using these aids and you may need training to help you adapt.

Prisms

Prisms for are used to help eliminate double vision. They are most effective when the size of the double vision does not change significantly as you look around. Immediately after a stroke, the double vision may change, so your orthoptist may recommend a temporary **Fresnel prism.**

Fresnel prisms are thin, transparent plastic sheets that stick to the surface of your glasses. One side has a series of angular grooves (prisms). The other, smooth side attaches to the lens of your glasses.

The strength needed may change over time. If so, the Fresnel prism can be removed and replaced with one of a different strength.

Once the double vision and strength of prism needed becomes stable, the Fresnel prism can be replaced with a permanent prism incorporated into the glasses lens itself.

Occlusion and patches

Occluding (covering) one eye fully or partially can be an effective solution for double vision. Usually occlusion is done by applying a frosting sticker to one lens of your glasses. If your eye is fully occluded by a **patch**, you will have what is called monocular vision - i.e., you will only see out of one eye.

Monocular vision can cause problems with reduced 3D vision or depth perception. This can lead to mobility issues - for example, judging distance or the height of a step can be difficult. You can find further information on monocular vision on the RNIB website (**www.rnib.org.uk/eyehealth**) or by calling the RNIB Helpline on **0303 123 9999.**

Occlusion does not have to cover the entire lens. Sometimes, only a part of your lens needs to be covered. This form of patching will not result in you being monocular, so you may have fewer problems with navigation and mobility.

Other visual problems

Other visual issues a stroke can cause include:

- **Sensitivity to bright light**
  This is often a result of changes to your eye muscle control, stopping your pupils from contracting properly in bright light.

  Tinted glasses or eye shields can help in easing the discomfort you might have. Some people find it is easier to read when placing a yellow transparent plastic sheet over their reading material to reduce glare.

- **Difficulty judging depth or distance**
  Objects may seem closer or farther away than they actually are.

- **Balance problems**
  Visual problems can affect your balance and movement. This may make you dizzy and unsteady on your feet, putting you at a higher risk of falling.

Dry eyes

Dry eye following a stroke can be due to problems with the facial nerve or with the nerves and muscles of the eyelid. You may blink less often, or not be able to close your eyelids completely. This can cause the front part of your eye (the cornea) to dry out, making your eye feel gritty and uncomfortable.

You can manage dry eyes by: using artificial tear eyedrops to keep your cornea lubricated, using ointment when sleeping, and reminding yourself to try to blink often and completely.

Visual agnosia

Visual agnosia means you can see objects or people clearly, but cannot recognise them. This is not an issue of vision, but in the parts of the brain that interpret what you see. For example, you may be able to read text readily, but unable to understand it. Or you may experience face blindness (**prosopagnosia**), where you cannot recognise faces.

Visual hallucinations

Damage to your visual cortex can cause hallucinations. Hallucinations caused by brain damage may be purely visual, or they may include sounds, smells, and feelings too.

You may also experience something called Charles Bonnet Syndrome (CBS), where people who have suddenly lost their vision see things that are not really there. With CBS, the hallucinations only affect your sight, so you do not hear, smell, or feel things that aren't there.

Some people find that their hallucinations get less frequent over time and they may eventually stop. For others, the condition may continue for years. More information about managing and coping with CBS can be found in the 'Understanding Charles Bonnet syndrome' booklet on the RNIB website - **www.rnib.org.uk/eyehealth.**

Making the most of your sight

There are things you can do to make the most of your remaining vision.

For example: making things bigger, using brighter lighting, or using colour to make things easier to see.

Low vision aids

Ask your ophthalmologist, optometrist or GP about having a low vision assessment.

During this assessment, you'll be able to discuss the use of magnifiers, lighting, colour contrast and other aids and adaptations to help with day to day tasks like reading and writing.

Technology

Technology can help with accessing information after vision loss. Many smart phones, laptops and tablets are already equipped with features that can make it easier to access information. For example:

- **Specially designed hardware**
- **Text reader or screen reader software**, to read text and image descriptions aloud.
- **Video magnifiers,** which use a camera and screen to magnify physical print.
- **Audio-books,** which are often available through your local library.

Find out more:

www.chss.org.uk/resources-hub
www.visibilityscotland.org.uk/resources
www.rnib.org.uk/living-with-sight-loss
RNIB Confident Living guide: Technology

Coping with sight loss

Being diagnosed with vision loss can be stressful. You may be worried about the future and how you will manage with a change in your vision. These feelings are normal.

You may want to talk over these feelings with a counsellor. Your GP or social worker may be able to help you find a counsellor. RNIB can also offer sight loss counselling.

Social services support

Local social services can help you to get out and about safely and can offer practical adaptations around the home.

Eye Care Liaison Officer

Your eye clinic may also have a sight loss adviser (also known as an Eye Clinic Liaison Officer, ECLO or Vision Support Officer), who can be on hand to provide practical and emotional support about your eye condition.

Certification and registration

If you have vision loss, then you may want to ask your ophthalmologist whether you're eligible to register as sight impaired (partially sighted) or severely sight impaired (blind). Registration can act as your passport to expert help and sometimes to financial concessions. Even if you aren't registered, a lot of this support is still available to you.

Driving

After a stroke, even if your vision is unaffected, you must **not drive for at least one month.** If you have visual changes, you must tell the DVLA once they have been fully assessed. You might not be able to return to driving.

Eye tests

Regular eye tests are important for everyone, especially if you already have issues with vision. NHS eye tests are free once every two years if you are between 16-59 years old, and once a year if you are outside that age range.

Specialist help

Besides your NHS optometrist, you can get help with your vision from:

- Your stroke team
- Stroke nurses
- A low vision specialist
- A hospital orthoptist or ophthamologist
- A neurologist
- Your GP - they may not be able to help directly, but should be able to refer you to a specialist

You can also get a lot of non-specialist support from friends, family, and the people around you.

Who we are

This booklet was developed by three charities who may be able to help you with your visual issues after a stroke:

Chest Heart and Stroke Scotland

Chest Heart & Stroke Scotland

CHSS has been offering support and advice to people who have had a stroke for decades. We offer a wide range of post-stroke services including stroke nursing, support groups, and a range of information resources.

Call **0808 801 0899** to speak to one of our trained Advice Line practitioners.

Find more stroke information resources at **www.chss.org.uk/resources-hub**

Website: **www.chss.org.uk**
Email: **adviceline@chss.org.uk**

Royal National Institute of Blind People (RNIB)

RNIB
See differently

RNIB is the UK's leading sight loss charity. We offer practical and emotional support to blind and partially sighted people, their families and carers. We raise awareness of the experiences of blind and partially sighted people and campaign for change to make our society more accessible for all. We want to change our world so there are no barriers to people with sight loss.

We offer a Sight Loss Advice Service which can help you to find assistive technology, support you in your education and work, and much more.

Tel.: **0303 123 9999**
Website: **www.rnib.org.uk**
Email: **helpline@rnib.org.uk**

Visibility Scotland

Visibility Scotland offers patient support services, information and support, rehabilitation, and political advocacy for people dealing with sight loss. This includes communication support and help to find assistive technology aids.

We also offer self-management training and compensatory scanning training through our Neurological Sight Loss Service.

Tel: **0141 332 4632**
Website: **www.visibilityscotland.org.uk**
Email: **info@visibilityscotland.org.uk**

More help and support

Other organisations who may be able to support you include:

NHS Inform
NHS Inform is NHS Scotland's online resource, which has detailed information on a wide range of conditions and services.
www.nhsinform.scot

Sight Scotland
A Scottish charity which offers specialist care, information, and support for people experiencing sight loss.
www.sightscotland.org.uk
Tel: 0800 024 8973

eyes.scot
The Scottish national website for eye services and eye health information, which can help you to find a nearby NHS optometrist.
www.eyes.scot
Email: eyecare.gov.scot

Vision Research Unit
A research centre based out of the University of Liverpool, which explores neurological vision issues, and which has a range of documents available on using and caring for visual aids.
www.vision-research.co.uk
Email: vision@liverpool.ac.uk

British and Irish Orthoptics Society
A network of orthoptics specialists which also offers advice and information for patients.
www.orthoptics.org.uk/resources
Tel: 0121 728 5633
Email: bios@orthoptics.org.uk

Our publications are available for free to anyone in Scotland who needs them. Go to **www.chss.org.uk/resources-hub** for all our resources, including other Essential Guides in this series.

For free, confidential advice and support from our **Advice Line nurses**, call: 0808 801 0899 (Mon-Fri 9.30am-4pm), text: NURSE to 66777 or email: adviceline@chss.org.uk.

Across Scotland, over one million people – that's one in five of us – are living with the effects of a chest, heart or stroke condition. We are here to help everyone who needs us. But we need your support to do this. Go to **www.chss.org.uk/supportus** to find out how you can help more people in Scotland.

If you would like this resource in an alternative format, please contact our Advice Line nurses.

Chest Heart & Stroke Scotland

NO LIFE HALF LIVED

E143

E18 Published Mar 2024
Next planned review Mar 2027

Scottish Charity (no SC018761)