Headway
the brain injury association

Visual problems after brain injury

This publication describes various visual problems that can develop after brain injury. It also discusses the impact this can have, where to get support for these issues and suggestions for how to cope.

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Introduction

The brain has a key role to play in our ability to see. It receives visual information from our eyes, such as light, colour and shapes, and makes sense of it so that we can see the world around us.

If parts of the brain involved in processing vision get injured, the result can be a range of different types of visual problems.

This publication describes various visual problems that can develop after brain injury. It also discusses the impact this can have, where to get support for these issues and suggestions for how to cope.

The information in this publication does not replace clinical guidance from medical professionals. You should always get advice from your GP or other suitably qualified professional for help with managing the effects of brain injury.

The brain's role in vision

Vision is the skill that allows us to see the world around us. When we look at the world, a complicated set of processes takes place between the eyes and the brain.

First, the eyes take in visual information from the world around us, such as colours, shapes, movement, objects and people.

This information is passed from the eyes to the brain through electrical signals, along the optic nerve. The brain is then responsible for making sense of the information it has received. It will connect visual information with information stored in memory to give meaning and context, for example seeing the facial features of a loved one and being able to recognise them, seeing light outside and knowing that it is a sunny day or seeing a red traffic light and knowing to stop.

Some of the things the brain needs to do to decode information that it receives from the eyes are:

- Process and merge information received from both eyes;
- Process information across the visual field (including peripheral vision);
- Process the shape and colour of objects;
- Process the movement of objects;

- Process the location and position of objects in space (for example, are objects near or far, to the right or left, etc.);

- Recall information from memory to recognise and make sense of visual information.

Various parts of the brain are involved in processing these different aspects of vision. For example, at the back of the brain is an area called the occipital lobe, which is responsible for interpreting information such as colour, shapes and movement. At the sides of the brain are the temporal lobes, which are involved in recognising objects. Injury to these parts of the brain can therefore affect these aspects of vision.

Types of visual problems after brain injury

This section describes some types of visual problems that can develop after brain injury.

Blurred or double vision

Vision may become blurry after brain injury, causing problems with distinguishing details and recognising things. Double vision, also called diplopia, causes two images of a single object to be seen at the same time. This happens because the brain becomes unable to merge the information it is receiving from both eyes.

Visual field loss

Vision in a section of the visual field may be affected, so that a part of it appears blurry, dark or distorted. This may occur around the edges or at the centre of the visual fields, across half of it (known as hemianopia) or across a quarter of it (known as quadrantanopia).

Nystagmus

Nystagmus is a condition in which there is an involuntary, rhythmic shaking of the eyes. The eyes might move from side to side, up and down or in a circular motion. This can cause symptoms such as vertigo, nausea or headaches.

Blindness

Complete blindness after brain injury is rare. For this to happen, there must be significant damage to the optic nerve, multiple parts of the visual pathways or areas of the brain involved in processing vision. Blindness as a result of brain injury is also called ‘cortical blindness’.

Photophobia

An increased sensitivity to light that causes discomfort or pain is called photophobia. Some people with photophobia use darkened sunglasses to cope, however research suggests that in some cases this might actually prolong or worsen sensitivity to light.

Colour or motion vision changes

Colour vision may be affected, so that colours may appear different, washed out or, in more severe cases, in shades of grey. Motion vision problems, called akinetopsia, can cause moving objects to appear as static images that move in a jagged way rather than smoothly.

Depth perception changes

Otherwise known as stereopsis, depth perception allows us to judge the distance between objects so that we can assess how

far away something is. People with depth perception changes will struggle to identify the distance between things, causing difficulties with reaching out for objects, climbing stairs safely, driving or navigating around.

Squint

If eyes are pointing in different directions and are not working together, this is called a squint, or strabismus. This can cause some of the problems described earlier in this section.

Impact of visual problems

Vision is one of our most important senses, so when it is affected it can affect activities completed, skills, safety, emotions and quality of life. Some examples of these are given below.

Dizziness and balance problems

The body's balance system relies partly on visual information received from the world around us. Visual problems can therefore cause problems with dizziness and balance, which you can read about in more detail in our publication *Balance issues and dizziness after brain injury.*

Driving

Being able to drive relies on being able to see and navigate on roads, read road signs and process traffic light changes, among other visual processes.

Driving also relies on the ability to quickly and accurately interpret visual information from across the visual field. Hazards

can appear on the road at any time, and a driver must be able to detect and respond to these quickly.

Some modern cars have hazard alert systems that may partly compensate for some forms of visual problems. However, in many cases this will not be enough to keep a driver with serious visual problems safe on the road.

If you have visual problems after a brain injury, you must inform the relevant licensing authorities. Failure to do so could result in a fine of up to £1,000. More information on how to cope with changes in driving ability after brain injury is available in our publication *Driving after brain injury*.

Employment and education

There are a wide range of tools, apps and equipment that can be used to compensate for visual problems within the workplace or when studying. Screen readers, adapted environments and access technology can all help. In some cases, it may be possible to modify the work to make it more suitable.

Under the Equality Act (2010), employers are legally required to make ‘reasonable adjustments’ for employees with a disability within the workplace. Our publications Returning to work after brain injury and The Equality Act - a guide for brain injury survivors offer further guidance on this topic.

Reading

Many people read for pleasure, but it is also a vital skill that keeps us safe and oriented within the world.

Reading material such as books or website articles are often available or can be converted into accessible formats. For example, audio books, increased screen brightness, text-to-

speech readers, smartphone magnifiers and specialist lenses can be used to help. Reading apps can also be helpful.

Rotating pages when reading can help with some visual problems, while using tools such as bookmarks or sticky tabs can also sometimes help.

Socialising

Making arrangements, recognising people we are meeting with or seeing where we are going can be challenging, or even risky, with some types of visual problems.

It might be helpful to talk honestly with your friends about any visual problems (or indeed any effects of brain injury) that are causing you difficulties when socialising. Suggest making arrangements or meeting in environments that are comfortable, suitable and safe for you.

You can also consider using your Headway Brain Injury Identity Card in social settings to quickly explain to others when you need support with visual problems, or other effects of your brain injury. More information on this is available in the following section *Tips for coping with visual problems after brain injury*.

Mental health

Living with the effects of brain injury, including visual problems, can make some brain injury survivors feel a sense of loss, depression, worry or anger. These are all normal and understandable emotions to feel. Visual problems can change one's perception of and ability to navigate around the world, and this can be particularly worrisome. Mental health problems such as depression and anxiety may develop as a consequence of these changes.

If your mental health has been affected by visual problems, or other effects of brain injury, remember that help is available. Our publications *Depression after brain injury* and *Anxiety after brain injury* offer information and guidance on these issues.

The section of this publication *Tips for coping with visual problems after brain* injury can offer some useful suggestions for adapting to life with visual problems, which may in turn help to improve mental health.

Diagnosing and treating visual problems after brain injury

Professionals involved in diagnosing and treating visual problems

The visual pathway is very complicated, as there are different processes that take place between the eye and the brain. To diagnose visual problems after brain injury, clinicians may first have to find out whether the problem relates to the eyes, the brain or both.

If you have concerns about your vision after brain injury, you should start by talking to your GP, neurologist or optician. They may be able to investigate themselves or refer you on to a more specialised professional if needed.

A brain injury survivor with visual problems may be able to access support from a neuro-ophthalmologist. These are eye doctors that specialise in the brain's role within the visual system. As this is a highly specialised role, neuro-ophthalmologists are not always commonly available across the UK.

Ophthalmologists, orthoptists or opticians can also diagnose and treat various visual problems after brain injury, and are generally much more accessible.

Some of these professionals may also work in private practice.

Investigating visual problems

In some cases, basic visual tests such as visual acuity or visual field tests can be completed to investigate visual problems. When colour vision is affected, colour vision tests such as the Ishihara Plate Test can be used.

Brain scans may need to be performed using neuroimaging tools such as computerised tomography (CT) or magnetic resonance imaging (MRI). Information on these types of scans is available in our publication *Scans and tests after brain injury.*

Treating visual problems

Visual problems after brain injury are often treated in an eye clinic in hospital. Some hospitals have Eye Clinic Liaison Officers who can help with getting appropriate support. You should always start by talking to your GP or neurologist about getting a referral to an eye clinic.

As with some of the effects of brain injury, there may be no way to actually cure some types of visual problems. However, after investigating, clinicians can still help by offering the following where relevant:

- guidance on living with visual problems, such as strategies you can use to cope;
- recommendations of visual aids and adaptive equipment to help at home, at work, or when completing activities;
- exercises for retraining your eyes;

- prescriptions for specialist glasses using tinted, prism or magnifying lenses;
- prescriptions of medication;
- advice on organisations that can help with visual problems;
- directing to psychological services that can help with the emotional impact of living with visual problems after brain injury;
- discussing and arranging surgery, if needed.

Tips for coping with visual problems after brain injury

As there are different types of visual problems after brain injury, there is no single way of coping with them. Therefore, the strategies that will be most effective for you will depend on the type of visual problem you have and how it personally affects your life.

In this section we share some tips for coping with visual problems. Some may be useful and relevant to your circumstances, while others may not. Explore different ideas to see what works for you.

These suggestions do not replace clinical guidance.

- Consider using adaptive technology or accessibility device settings. Adaptive technology can make it easier for you to use devices such as mobile phones and computers. For example, many devices come with adjustable screen settings so that you can change the brightness, contrast or size of text. You could also use a screen reader, through which your

computer or mobile can read text aloud.

- Explore relevant apps. There are a wide range of apps available for all sorts of things nowadays. Some apps have been designed specifically to help people with visual problems. You should always be careful when choosing and downloading apps, and only use trusted sources. If you are not sure where to begin, it might be helpful to browse through these with someone you trust who is confident with using technology. Some of the organisations listed at the end of this publication might also be able to offer guidance on helpful technology or apps.

- Use items with bigger or brighter features, such as clocks with large numbers, books and screens with large text or telephones and remote controls with large buttons.

- Keep walkways clutter-free to minimise the risk of tripping.

- Take things at a slower pace where you can. This can include physically slowing down or taking more time to focus on doing things slowly and carefully.

- Contact your local authority's social services team for advice on how they can help, if you are struggling to cope with looking after yourself or completing regular activities. They might be able to arrange for services such as personal care, help with shopping or adaptations to be made to your home.

- Try to focus more carefully on your other senses to compensate for your visual problems. For example, focusing more on your sense of taste and smell when cooking, or listening carefully for traffic when out and about.

- Consider registering as visually impaired if your visual problems are causing difficulties on a regular basis. A clinician can assess whether you would be eligible to register as either Sight Impaired or Severely Sight Impaired, depending on the severity of your visual problems. Registering as visually impaired will make your GP and local social services aware of your visual problems, which will help if you need further support from them.

- Apply for a Headway Brain Injury Identity Card. This is a personalised card offered by Headway that explains you have had a brain injury and allows you to list the effects of brain injury that you most commonly struggle with. You can use this card to explain your support needs to others when needed, such as if you need help with your visual problems when out in public. You can find out more and apply by visiting our website at www.headway.org.uk/supporting-you/brain-injury-identity-card.

Glossary

Adaptive technology - technologies, devices and systems that are specifically designed to support people who may otherwise struggle with using them, such as those with disabilities.

Mild traumatic brain injury - injuries to the brain as a consequence of hitting the head, with either no loss of consciousness or a loss of consciousness for no more than 30 minutes.

Needs assessment - an assessment conducted by social services to identify what support needs someone has.

Optic nerve - a bundle of nerve fibres that transmit information from the eyes to the brain.

Peripheral vision - the type of vision that enables us to see things that are not directly in front of us.

Prism - specialist lenses that can bend light, which can help with some types of visual problems such as double vision.

Reasonable adjustments - within the context of the Equality Act (2010), adjustments that employers are legally required to make to assist disabled employees so that they are not disadvantaged by their disability within the workplace.

Static - not moving, stationary.

Tinted - coloured lenses that can sometimes help with visual acuity or photophobia (increased sensitivity to light).

Vertigo - dizziness and spinning sensations.

Visual acuity - how clearly someone can see at a distance.

Visual field - the full area that someone is able to see when looking, including both central and peripheral vision.

Further information and organisations

The organisations listed below are provided for information purposes only. Their inclusion does not imply

endorsement, recommendation, or approval by Headway. Users should make their own assessment of any organisation or service before engaging with them.

- **The NHS website** has further information on living with vision loss, available at www.nhs.uk/conditions/vision-loss. You can also find details of local NHS opticians and optometrists at www.nhs.uk/service-search/find-an-nhs-sight-test/location.

- **The Royal National Institute of Blind People (RNIB)** is a charity dedicated to supporting people with blindness and sight loss. They have extensive information on their website, a range of resources and a helpline. Visit their website at www.rnib.org.uk or contact their helpline on 0303 123 9999.

- Ex-servicemen with visual problems can contact **Blind Veterans UK** for support and information at www.blindveterans.org.uk.

- The **Thomas Pocklington Trust** can offer information and support on employment and education to people who are partially sighted or blind. For more information, visit www.pocklington.org.uk.

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We hope that this has been a helpful resource. Please consider sharing your feedback with us by scanning the QR code or by visiting our publication feedback survey https://uk.surveymonkey.com/r/hwpublications.

Learn more and support our work at www.headway.org.uk/get-involved.

This information was last reviewed in 2024.

We're here to listen.

If you need support, or have a question about brain injury, contact our free nurse-led helpline:

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