

# Eye movement problems following stroke or head injury



**Information for patients**

Ophthalmology



**PROUD TO MAKE A DIFFERENCE**

SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST





## What eye movement problems can people have after stroke or head injury?

Problems with eye movements and eye position are common after stroke. Incidents have been reported as high as 68%. These defects are caused by disruption of areas of the brain and nerves controlling eye movements. Problems may include:

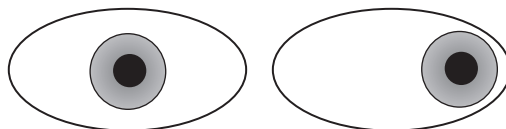
- squint
- eye movement defects
- nystagmus
- eyelid defects

Symptoms relating to problems with eye movements and squint include:

- double vision
- blurred vision
- loss of depth perception
- oscillopsia (objects appear to wobble)

### Squint

A squint is a misalignment of the eye. The eyes do not look in the same direction; one eye may drift inward, outward, up or down or any combination of this.



**The above illustration is an example of a left divergent squint (exotropia); the left eye is turned outwards**

Squints may be constant or intermittent. Adults with recently acquired squints may experience double vision or loss of depth perception.

## **Defective eye movements / ocular motility**

Stroke and head injury can affect the movement of the eyes in a number of ways:

### **Scanning and re-fixation eye movement difficulties:**

Scanning problems are when the eyes have difficulty following a moving target. Re-fixation eye movement defects are when the eyes have difficulty in looking between two different objects. These types of defects can cause difficulties with reading, mild dizziness when moving about and difficulty in concentrating on visual tasks.

### **Gaze palsies:**

This is when both eyes are unable to look in a certain direction e.g. unable to look upwards. A patient with a right horizontal gaze palsy is unable to move their eyes to the right. They will often turn their face to the right in order to look right because the eyes won't move in that direction.

### **Nerve / muscle palsy:**

This is due to a weakness of one or more of the eye muscles. Each eye has six eye muscles that are responsible for moving the eye. If the nerve supply to the muscle is affected by the stroke the muscle will not work effectively. The affected eye will not be able to move in the direction of action of the affected muscle(s). The person may experience double vision when they look in a certain direction. They may notice one eye not moving in a certain direction.

## **Nystagmus**

This is an involuntary movement of the eyes. The eyes can be seen to wobble or oscillate. Most commonly the eyes move from side to side but may move up and down or even in a circular motion. Nystagmus may only be present when the person looks in a certain direction or if they are concentrating on something.

A person with nystagmus may experience their environment moving or oscillating. This is known as oscillopsia. Oscillopsia is a visual sensation of stationary objects or the environment moving.

## **Eyelid defects**

Following a stroke or head injury the eyelids can be affected in a number of ways. For example:

- A droopy eye lid; this is known as a ptosis. The eyelid may be totally closed or just partially closed.
- Incomplete eyelid closure. The lid does not properly close e.g. when the person is asleep.

## **Double vision (diplopia)**

Double vision is when two images are seen of the same object. The two images may be one on top of the other, side by side, or a mix of both. Double vision may be constant, it may come and go, or it may only occur when looking in a particular direction.



Double vision may be monocular i.e. when one eye is open or binocular i.e. when both eyes are open. Binocular double vision is associated with a squint or eye movement defect. When one eye is closed the double vision will go away.

## **Loss of depth perception**

Depth perception, also known as stereo-vision, is the ability to see in three dimensions (3D vision) and judge relative distance.

The presence of a squint results in loss of depth perception. A person will experience difficulties judging distances and depth. For example, when pouring liquid into a cup, he/she may miss the cup. They may also under or over step when attempting to climb stairs as it will be more difficult to see the depth of the step.



He/She might also struggle to cross roads as it is harder to judge how far away a vehicle is and the speed it is travelling at.

## How can I tell if someone has a squint or eye movement problem?

- One of their eyes may turn inwards, outwards, upwards or downwards, while the other eye looks forward.
- One or both eyes might have difficulty in looking in certain directions
- They might close one eye to avoid double vision
- They might use an abnormal head posture e.g. hold their head in a certain position to avoid double vision, to reduce nystagmus or centralise their field of eye movement
- They might have difficulty judging distance
- They may feel dizzy or lose their balance
- They may be more susceptible to trips or falls

## How will a squint or eye movement problems affect someone?

Many people who have defective eye movements following a stroke are aware of symptoms. These include: double vision, eye strain, headaches, reduced/blurred vision, dizziness, oscillopsia and difficulty reading or watching TV. They may also struggle with daily living tasks.

## Can squints or eye movement defects recover?

The recovery of squints and eye movement defects is variable. It is difficult to say from the onset whether they will recover or when. Sometimes there is no recovery or only partial recovery. It can take 6 months to a year for squints and eye movement defects to recover or stabilise.

When squints and eye movement problems are present it is important to get advice from an **Orthoptist**. They can help improve symptoms and promote recovery.

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

There are a number of options for the treatment of eye movement problems. The treatment depends on the problem and the symptoms experienced by the patient. Your Orthoptist will advise which treatments are suitable. They may include:

- Eye exercises - to improve eye movements and eye control, for example scanning movements
- Prisms - to join double vision
- An eye patch - to remove double vision or help reduce symptoms for certain types of nystagmus
- Compensatory strategies such as using an abnormal head posture
- Eye muscle surgery may be considered once the eye movement defect has become stable.

## **What can be done at home to help someone with eye movement problems?**

A number of things can be done to help people with eye movement problems

If it is difficult for someone to look or move their eyes to one side, then position objects or seat friends and family to the unaffected side.

For people with loss of depth perception it is advisable to alert them to steps and stairs until they get more used to judging distances and depth.

## **Can someone with eye movement problems drive?**

Initially someone with eye movement problems is advised not to drive. It is illegal to drive with double vision or reduced vision.

Each stroke is different and, depending on how well the eye movement problem and other stroke related problems recover, some people are able to return to driving.



Following an Orthoptic assessment, treatment and a period of adaptation, some people are able to drive with a prism or with one eye occluded or patched. The Orthoptist will advise you when it is safe to drive.

The Orthoptist will advise you if you need to notify the DVLA about your eye condition. You will also need to notify your insurance company.

## **Where can I find more information about eye movement problems?**

If you would like to know more about eye movement problems or have any questions or concerns, please contact the Orthoptic Stroke Service at the Royal Hallamshire Hospital on:

- **0114 271 3021**

## **Additional help and advice is available from:**

### **The Stroke Association**

Stroke House  
240 City Road  
London  
EC1V 2PR

- Tel: **020 7566 0300**
- Website: **[www.stroke.org.uk](http://www.stroke.org.uk)**

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## **Stroke Association – Local Information, Advice and Support**

- Sheffield: **0114 268 2633** or **0114 266 0186**
- Barnsley: **01226 283 509**
- Rotherham: **01709 782 344**

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## **Headway – the Brain Injury Association**

Broad House  
190 Bagnall Road  
Old Basford  
Nottingham  
NG6 8SF

- Tel: **0115 924 0800**
- Website: **[www.headway.org.uk](http://www.headway.org.uk)**

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## **Nystagmus Network**

25 Eden Way  
Beckenham  
Kent  
BR3 3DN

- Tel: **029 2045 424** or **0845 634 2630**
- Email: **[info@nystagmusnet.org](mailto:info@nystagmusnet.org)**
- Website: **[www.nystagmusnet.org](http://www.nystagmusnet.org)**





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