Neurological vision impairment is loss of vision resulting from an acquired brain injury or impairment in the coordination of the eyes, and difficulties with visual perception (also known as ABI VI). Damage to the areas of the brain that are responsible for sight is involved.

The many causes of ABI VI include stroke, brain tumour, head injury and infections such as meningitis. ABI VI used to be called cortical visual impairment and cortical blindness.

Our eyes deliver information on the world around us to various parts of the brain via nerves that detect light. The occipital cortex, situated at the rear of the brain, processes the information and allows us to see distance, shape, movement and colour.

The type and severity of vision loss depend on which area of the brain was affected and to what degree. In some cases, the impairment may improve with time – for example, children with ABI VI tend to experience improvement as they grow older.

Symptoms of neurological vision loss
Symptoms and signs of ABI VI depend on the kind of vision impairment the person has and the area of the brain affected, but may include:

- blurry or hazy vision
- double vision
- colliding with obstacles or people
- problems with balance or depth perception
- photophobia (difficulty with bright light)
- difficulty perceiving and interpreting what is being looked at
- partial loss of the visual field (for example, half of the visual field in each eye or a quarter of the visual field in each eye).

Causes of neurological vision loss
Some of the many causes of ABI VI can include:

- stroke or ‘brain attack’, where part of the brain is damaged by a haemorrhage or blockage in a blood vessel of the brain
- traumatic brain injury – for example, after a car accident or fall
- infection, such as meningitis or cytomegalovirus
- lack of oxygen, such as near-drowning or a heart attack, which can interrupt the flow of blood to the brain
- disease, such as a brain tumour or multiple sclerosis.
A range of neurological vision loss

Some of the different kinds of vision loss caused by brain injury include:

- visual field defects – such as homonymous hemianopia, when one half of the visual field in each eye is missing
- double vision (diplopia) – where a single object is seen as two and cannot be merged together
- fluctuating vision – this means the impairment is variable, for example, the person may be able to see something one day, but not the next
- visual acuity problems – reduced clarity of vision
- eye movement problems – for example, jittery eye movements or the tendency of the eyes to flicker around when the person is trying to look steadily at something (nystagmus)
- strabismus (squint) the eyes are not aligned – for example, it may turn inwards or outwards.

Homonymous hemianopia

One of the most common vision impairments from an acquired brain injury is hemianopia. Hemianopia can be in one eye only or, if it is a homonymous hemianopia, one half of the visual field in each eye is affected.

In the case of a left homonymous hemianopia, the person may describe this impairment as being unable to see out of the left eye, but that is not the case. The visual field on the left of both eyes is affected.

The person with homonymous hemianopia may report other people appearing to have only half a face. When reading, words and sentences disappear once they fall into the missing visual field.

This type of vision impairment can affect a person’s safe independence, because the person may not be aware of hazards on their blind side. In severe cases, they may not be aware of the reduced visual field and consequently, what they are missing. This is referred to as a visual neglect.

Treatment for neurological vision loss

ABI VI cannot be corrected with glasses or contact lenses, as the cause lies within the person’s brain rather than their eyes.

Treatment involves managing the symptoms and depends on the type of vision impairment and its cause. Options may include:

- treating the underlying brain injury. If the brain can recover from its injury, the person’s vision may also improve
- wearing an eye patch – this can relieve double vision
- options for managing poor visual clarity include using large print, writing with a thick black pen on a white background to heighten contrast, increasing magnification and ensuring adequate and appropriate lighting
- a person with a visual field defect can learn to use their eyes and head in a scanning fashion, which means moving the eyes and head back and forth to make sure they look for objects in their blind spot.

Special programs, such as the Acquired Brain Injury Mobility Service provided by Guide Dogs Victoria, are available to people with ABI VI. The Acquired Brain Injury Mobility Service provides a specialised assessment and training program for people who have a vision loss caused by a brain injury.

Each person who applies for the Acquired Brain Injury Mobility Service undergoes an initial assessment which aims to:

- determine the ability to move freely and safely around a range of environments and establish appropriate mobility goals
- determine the extent of vision loss and impact on independent travel skills
- determine the impact of other impairments, such as memory, balance, attention and concentration on mobility
- determine the person’s ability to walk confidently on different surfaces
- develop skills for using public transport
- evaluate the need for a mobility aid

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educate the person, their family and rehabilitation professionals about the nature and impact of the vision loss.

The instructors encourage each person and their families to give their input into developing tailored programs designed to achieve the person’s optimal potential and personal goals.

**Acquired Brain Injury Mobility Service**

The program is available free of charge to both the person with the neurological vision loss and their carers. Accommodation is available in the residential training centre, known as Arnold Cook House, if necessary.

**Where to get help**

- Your doctor
- Vision Specialist
- Neurologist
- Rehabilitation specialist
- Acquired Brain Injury Mobility Service, Guide Dogs Victoria Tel. (03) 9854 4467 – contact the Referrals Officer
- BrainLink Tel. (03) 9845 2950 or 1800 677 579

**Things to remember**

- Vision impairment related to an ABI is loss of vision caused by damage to the areas of the brain that are responsible for sight.
- Glasses or contact lenses generally won’t help, because the vision impairment is due to damage to the brain and not the eyes.
- In some cases, glasses may help to improve double vision, through the use of prisms.
- Treatment involves managing the symptoms and depends on the type of vision impairment and its cause.