

NEURO VISION TECHNOLOGY

QUESTIONS AND ANSWERS

WHY IS THE DISGNOSIS OF NEUROLOGICAL VISION IMPAIRMENT SOMETIMES MISSED?

- **Lack of awareness by the patient:**

Despite significant vision loss often there is no perception by the person of a gap or black spot in their vision. The brain tells the person that what they see is all there is. As a result of this lack of insight the people will often not understand why objects appear and then disappear.

- **Vision loss is not visible to others:**

Problems with movement, or speech are obvious to others, however changes to vision are not apparent to an onlooker. And the patient has no way of knowing that they do not see and therefore may fail to report visual symptoms.

- **Neurological vision impairment can include changes in perception and attention:**

The difficulty arises when the vision deficit is not one of sensory loss (hemianopsia) but one of an 'attentional' deficit, known as Unilateral Visual Neglect (UVN). Both can exist in isolation, or together. The symptoms of Unilateral Visual Neglect are exacerbated when it coexists with Homonymous Hemianopsia.

HOW IS NEUROLOGICAL VISION IMPAIRMENT MOST EASILY DETECTED?

Conventional tests for visual field loss will certainly pick up most visual field impairments. The fact that the field loss is similar in both eyes is the key to differentiating a neurological vision loss from an ocular problem.

The detection of UVN requires observation of a task where the person is required to divide attention between multiple stimuli. This is not the case with conventional visual perimeter tests (e.g. Humphreys, Medmont etc). These use central fixation and presentation of single stimuli to test visual fields and will often not detect the presence of a UVN.

In many cases a UVN, or inattention, will not be apparent until a person is asked to attend to visual information whilst carrying out a physical activity or cognitive tasks. Driving a vehicle is a good example of a task where a visual inattention, previously undetected, may become apparent.

IS THE PROBLEM SOLVED BY MOVING OBJECTS INTO THE INTACT VISUAL FIELD?

It is a misconception to think that you can simply move an object into the unaffected field. The field loss moves everywhere the eyes move, across all fields. Hence in the presence of a left Homonymous Hemianopsia, when you are looking towards the right you will still miss the left half of what you are looking at.

This applies to all objects irrespective of whether it is a word, a line of print, food on the plate or the scene around you. If you are looking directly at the object you miss half of it.

Adjusting the environment to suit the vision loss only reinforces a lack of awareness of the vision loss further reducing the likelihood of the person adopting compensatory scanning strategies

WHAT THERAPY IS CURRENTLY AVAILABLE AND HOW DO THEY COMPARE?

	NVT Scanning Training	Prisms and Mirrors	Restorative Vision Therapy
Mode of operation	Establishes head and eye movement	Moves the image of the object not the eyes	Resolution of vision loss
Improvement in functional visual field	50°	15° - Reduces vision on the side that the prism is fitted.	5° - 12° in select group of patients
Improves reading	✓	X	✓
Improves mobility	✓	?	X
Does not distort vision	✓	X	✓
Suitable for patients in early stages of recovery	✓	?	✓
Suitable for remediation of unilateral visual neglect.	✓	✓	X
Identifies presence of additional cognitive factors that may limit safety.	✓	X	X

WHY ARE THERE GAPS IN SERVICE PROVISION?

The provision of Physiotherapy , Speech Pathology and Occupational Therapy are universally accepted as part of a standard rehabilitation program. The incidence of Neurological Vision Impairment is as high as 30 –35% of people who have a stroke, and reportedly higher when the brain injury is due to trauma. This is the same incidence as language deficits, yet the inclusion of vision therapy does not form part of standard rehabilitation programs.

Blindness agencies have eligibility criteria based on clinical measures of vision. Legal blindness criteria are based on acuity and visual field, and hemianopsia lies outside the visual field loss required for legal blindness. Functional difficulties are often not part of eligibly guidelines, hence referrals to traditional blindness agencies may not be made.

Vision effects every facet of rehabilitation so no one therapy group assumes responsibility. Occupational Therapists generally conduct the assessments for visual screening and UVN. The majority of tests used do not involve ambulation, rather the patient is seated and tasks relate to reading and pen and paper tasks. These do not replicate the high level vision skills required for mobility in a dynamic environment.

Vision rehabilitation specialists, with skills in teaching orientation and mobility, are best suited for this task yet they are seldom included as part of a multidisciplinary team

WHAT ADDITIONAL EXPERTISE CAN A MOBILITY SPECIALIST PROVIDE?

Advanced knowledge of the visual system and skills in teaching compensatory techniques in mobility tasks.

Ability to assess and provide training in a variety of environments. Generalization of skills gained in a rehabilitation setting often need to be actively transferred to the community setting. Blind Rehabilitation Outpatient Specialists (BROS) are ideally suited to optimize gains made in inpatient facilities and ensure that these are carried through after discharge.