

2005: Asia's First Vision Restoration Therapy

by Tan Tock Seng Hospital

VISION RESTORATION THERAPY: NEW HOPE FOR STROKE PATIENTS

Introduction

Every year more than 5,000 patients are admitted for strokes and stroke related diseases in Singapore. Although, no local studies have been done to assess how many suffer from visual field defects or visual loss, it has been estimated that up to 20% have strokes involving the visual pathways in the brain. Such patients commonly experience many limitations in their daily activities as well as in their journey in rehabilitation.

The generally accepted paradigm that nothing can be done leaves little hope for such patients as restoration was once considered impossible.

In recent years, however, a paradigm shift has taken place. Through high-resolution perimetry, areas of residual vision can now be identified where training visual functions help to restore some of the lost vision. There is now a growing body of evidence that the visual system is not as "hard-wired" as previously thought. A considerable overlap of receptive fields in the visual system is present and an astonishing degree of plasticity is maintained in life.

Neuro-plasticity forms the scientific basis for vision restoration therapy, a revolutionary new rehabilitation programme for patients with visual field loss from

strokes or traumatic brain injuries. Neuro-plasticity is the ability of the brain to adapt to various experiential and structural changes.

Vision restoration therapy available in Tan Tock Seng Hospital

This new revolutionary visual rehabilitation therapy (VRT) programme is now available in Singapore to treat patients with visual field defects from post-geniculate brain disorders such as strokes, brain tumours and post-surgery neuro-surgical patients. It is a collaborative effort between The Eye Institute @ Tan Tock Seng Hospital and Nova Vision, a U.S. based company. This therapy has been approved by the Federal Drug Authority in 2003 and is available in major eye institutes and rehabilitation centres in U.S.A.

An initial diagnostic test using high resolution perimetry is done to assess the area of transition vision between seeing and non-seeing areas of the visual field. VRT performs binocular visual stimulation on a monitor within this transition zone. Its aim is to expand this transition zone into a useful navigational area for the patient. Treatment involves twice-a-day sessions of 30 minutes each at a device screen at home whereby the patient fixes his/her gaze on a spot in the centre of the screen and then click to signal when he/she becomes aware of

a dot on the periphery. This is customised to each patient and modified monthly according to the patient's progress. A review is made regularly to adjust the software accordingly. The treatment programme lasts six months.

VRT is safe and has not been associated with any serious adverse effects on the patient. The major exclusion criteria include:

- Known seizures or photosensitive epilepsy
- Total blindness or central scotoma
- Unstable fixation or nystagmus
- Intellectual deficits (IQ below 85)
- Neglect
- Dementia
- Serious handicaps such as deficits of motor functions, concentration ability or memory

Prior to starting VRT, patients will be assessed on their suitability for this therapy based on the above criteria. This will be followed by an initial diagnostic test using high-resolution therapy on the VRT device. The results will allow a customized home-based therapy programme for each patient which is updated monthly. Each patient will return to Tan Tock Seng Hospital for an assessment after 3 and 6 months of therapy.

