

## AN INSIGHT INTO LOW VISION AIDS

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In India according to Person with Disability Act, 1995 as well as under the National Programme for Control of Blindness (NPCB), Blindness refers to condition where person suffers from any of the following condition namely:

- Total absence of sight ; or
- Visual acuity not exceeding 6/60 or 20/200(Snellen) in better eye even with correction lenses; or
- Limitation of field of vision subtending angle of 20 degree or worse.<sup>[1]</sup>

The Persons with Disabilities Act, 1995 also recognizes low vision as a category of disability and defines it as follows:

“Person with low vision” means a person with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device”.<sup>[2]</sup>

The WHO working definition of Low Vision (WHO, 1992) is as follows:

“A person with low vision is one who has impairment of visual functioning even after treatment, and/ or standard refractive correction, and has a visual acuity of less than 6/18 to light perception or a visual field of less than 10 degrees from the point of fixation, but who uses, or is potentially able to use vision for the planning and/or execution of a task”.<sup>[3]</sup>

The points emphasized are that in a significantly reduced vision, visual performance is affected but that there still is vision that can be used. This last point is very important: if there is usable vision, training to use that vision might be possible. In addition, this person is not labelled blind.

The estimated number of people visually impaired in the world is 285 million, 39 million blind and 246 million having low vision; 65 % of people visually impaired and 82% of all blind are 50 years and older.<sup>[4]</sup>

India projects a higher number of blind people at international forums because of its definition. India currently has around 8 million blind people against 39 million globally -- which makes India second highest in world's blind population.<sup>[5]</sup>

People with low vision can remain independent and continue to lead fulfilling lives with the help of low vision aids (LVA). Some low vision aids work by making things bigger and brighter while others work by allowing patients to rely more on audio and hearing. People with low vision can also reorganize their environment at work and at home to make daily life easier for them.

Many Low vision aids are available which can be prescribed to the patients according to the patient's visual status, mental status, need, occupation and working and residential environment.

Optical LVA for distant viewing such as hand-held/spectacle mounted telescopes, spectacle model telescope, and bioptic telescope can be used for distant tasks such as recognizing faces, reading blackboard, street signs, recognizing vehicles etc. However spherical aberrations, reduced field of vision, decrease depth perception and cost can be limiting factor.



Biopic Telescope



SEE TV (Spectacle Model Telescope)



**CONTRAST ENHANCEMENT**



Poor Contrast



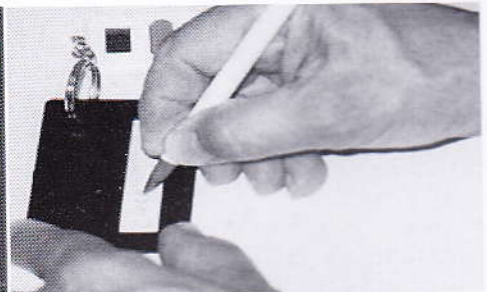
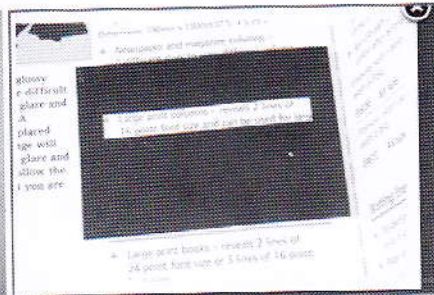
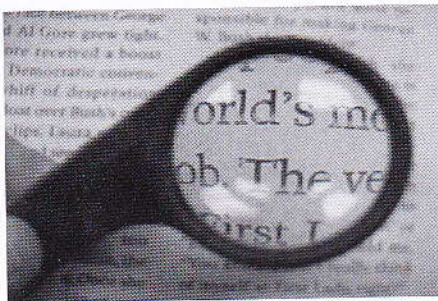
Better Contrast

Optical LVA for near vision such as bifocal spectacles, hand-held/stand magnifiers, notex (for currency identification) make daily household activities such as reading easier for patients. Non-optical aids such as approach magnification, lighting, contrast enhancement (typoscope) are other devices used for reading. Letter writers, fibre-tipped pens and signature guides can be used to write and sign in straight line. Hand held magnifiers are cumbersome, as they are not hands free like their counterparts, making it difficult for patients with tremors and while doing tasks that require use of hands, like writing, etc.

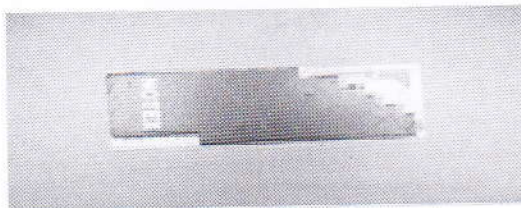
**HAND-HELD MAGNIFIER**

**TYPSCOPE**

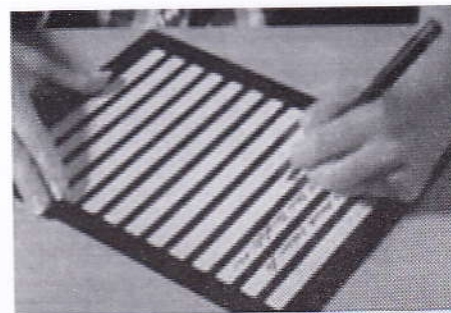
**SIGNATURE GUIDE**



**Notex - Currency Identification**



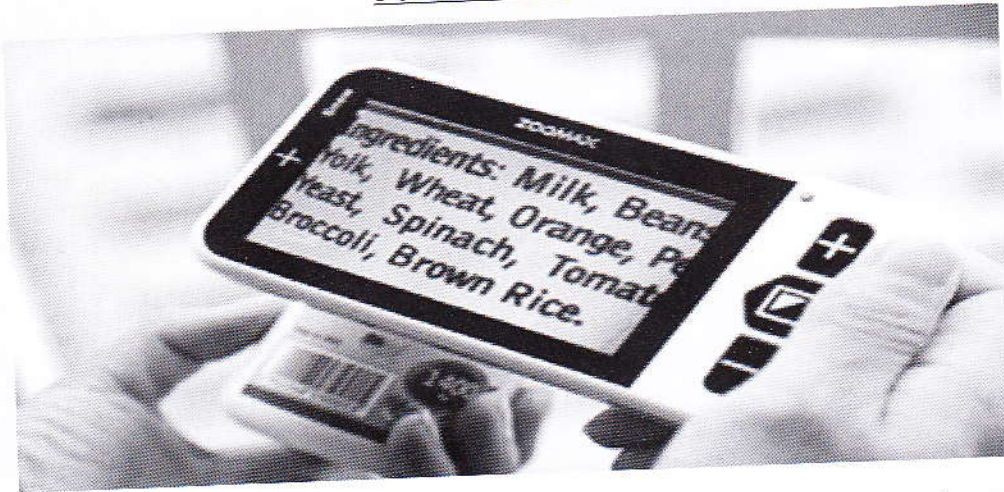
**Letter Writer - to write in straight line**





Recent advances in digital image processing provide promising methods for maximizing the residual vision of the visually impaired. To name a few devices such as talking watches, GPS, e-readers, computer software (JAWS, MAGIC), smartphones and tablets have made the world easy for them. Smartphones and tablets offer a range of apps and built-in functions to help people with low vision: iRead, iLoupe, Tap Magnify, iCan See and iMagnify use the device's camera and light source to magnify and illuminate text.<sup>[6]</sup> Electronic video magnifiers like closed-circuit TVs (CCTVs) provide distortion free viewing, a large field of view and a very large range of magnification levels.

**PORTABLE CCTV**



The approach in managing a patient with low vision should not be that 'Nothing can be done for your disease', but rather, 'since not much can be done medically or surgically for your disease, you will be evaluated for enhancement in the vision with the help of visual aids'.

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