



Low vision

Causes, effects and treatments

Vision is a complex sense, encompassing the ability to perceive detail, color and contrast, and to distinguish objects. These abilities can diminish with age. Most visual changes can be corrected by glasses, contact lenses, medicine or surgery. Visual changes caused by eye disease, poor health or injury that are not correctable by conventional methods, result in permanent vision loss. If the vision loss is total, the result is blindness. If the loss is partial, the result is an impairment known as low vision. People with low vision retain some usable vision.

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What is low vision?

Low vision can interfere with one's ability to function independently and to perform activities of daily living. Some problems include: loss of the ability to read standard-size print, inability to drive, difficulty performing work-related tasks, inability to dress or cook, and the inability to recognize familiar people.

According to the National Eye Institute, about 3.5 to 5 million Americans experience age-related eye disease, with the number expected to grow by 2020. The most common causes of visual impairment and low vision in the adult population are:

- **Age-related macular degeneration**
- **Glaucoma**
- **Cataracts**
- **Diabetic retinopathy**

Examining patients with low vision

Examination of the visually impaired patient begins with a thorough comprehensive eye exam. Special eye care services, beyond what is covered by a vision plan, may be required. Those additional tests may be covered by a person's medical insurance. The examination is conducted to determine the physical causes of the impairment and to quantify the remaining visual abilities for the purpose of determining the visual rehabilitation plan. The exam may need to be modified to accommodate the different levels of visual functioning. The goal of the primary care optometrist or ophthalmologist should be to provide basic low vision care and to prescribe aid in the form of high-powered near or multi-focal additions. Management of patients with severe low vision may require referral to an eye care provider skilled in low vision rehabilitation.

Low vision therapy

Low vision therapy is a system of using optical and non-optical aids, with instruction and rehabilitation, to help a person use their residual vision to improve their quality of life. It can allow a person to read, watch television, drive and to recognize faces. It is not a surgical procedure. Low vision therapy uses a combination of lenses, prisms and lighting techniques to use the parts of the retina that are still functioning. It makes the best use of a person's visual potential. The retina and the brain are retrained to see.

Few people are totally without sight. Most individuals classified as "blind" actually have remaining sight. Developments in the field of low vision rehabilitation can help people make good use of their remaining vision.

Quality of life

According to a study by the National Institutes of Health, patients who have impaired vision are at an increased risk of injuries from falling (hip fractures) and have a greater risk of becoming depressed. Visually impaired children are often delayed in the areas of gross and fine motor skills. For students, the inability to read standard-size print, to see the chalkboard or computer screens can have an impact on their educational development. Visually impaired adults are concerned with maintaining employment and independence.

For adults, a best-corrected visual acuity of 20/50 could create challenges at work or with driving a car. Low vision therapy could aid these people and allow them to be more productive. Traditionally, vision rehabilitation was directed toward patients who were blind or had very low vision. Now, doctors realize that less severe vision loss may also be associated with quality of life issues.

When assessing a visual impairment, it is important to look beyond visual acuity loss. Visual impairment can also be the result of peripheral vision loss. Patients with peripheral vision loss have more difficulty navigating through the environment than persons with reduced acuity and no peripheral field loss. Optical devices and training can often improve awareness of the environment, allowing for independent travel by the patient. Mobility evaluation by an orientation and mobility specialist may be helpful.

Appropriate optical and non-optical training and therapies can be designed to enhance and improve efficiency. Psychological counseling may be required to improve the person's ability to cope with vision loss.

Low vision aids and devices

A misconception about low-vision aids is that there is going to be one pair of glasses that will solve the visual impairment problem. Typically, more than one device is needed, such as:

- **High-powered reading glasses**
- **Handheld and spectacle-mounted telescopic systems**
- **Hand and/or stand magnifiers**
- **Closed-circuit television systems**
- **Video magnification units worn on the head**
- **Computers**

Telescopic systems are best suited for viewing distant objects, such as street signs. Many U.S. motor vehicle agencies have sanctioned spectacle-mounted telescopic lenses for driving. A biotic telescope is a system where a telescope is attached to the top of a pair of glasses. Patients are trained to switch between the telescopic lens (used to view highway signs) and the "regular vision" lens.

In some cases, the optimum near-low-vision prescription can be determined after the initial comprehensive eye exam. Sometimes, prescribing a stronger than normal bifocal or reading glasses will improve the vision enough



to satisfy the patient. Most visually impaired people are very sensitive to changes in illumination and require specific lighting conditions for optimum comfort and functioning. The doctor can consider the following strategies to help: large-print materials, the use of tints and lens coatings, audio materials, and the use of non-optical devices such as hats, visors and bold-line pens.

Optometrists and ophthalmologists play a vital role in the treatment and education of low vision. See your eye care professional today if you believe you or a loved one could be suffering from any potential visual impairment that might lead to low vision.

Resources:

The National Eye Institute, http://www.nei.nih.gov/strategicplanning/np_low.asp

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