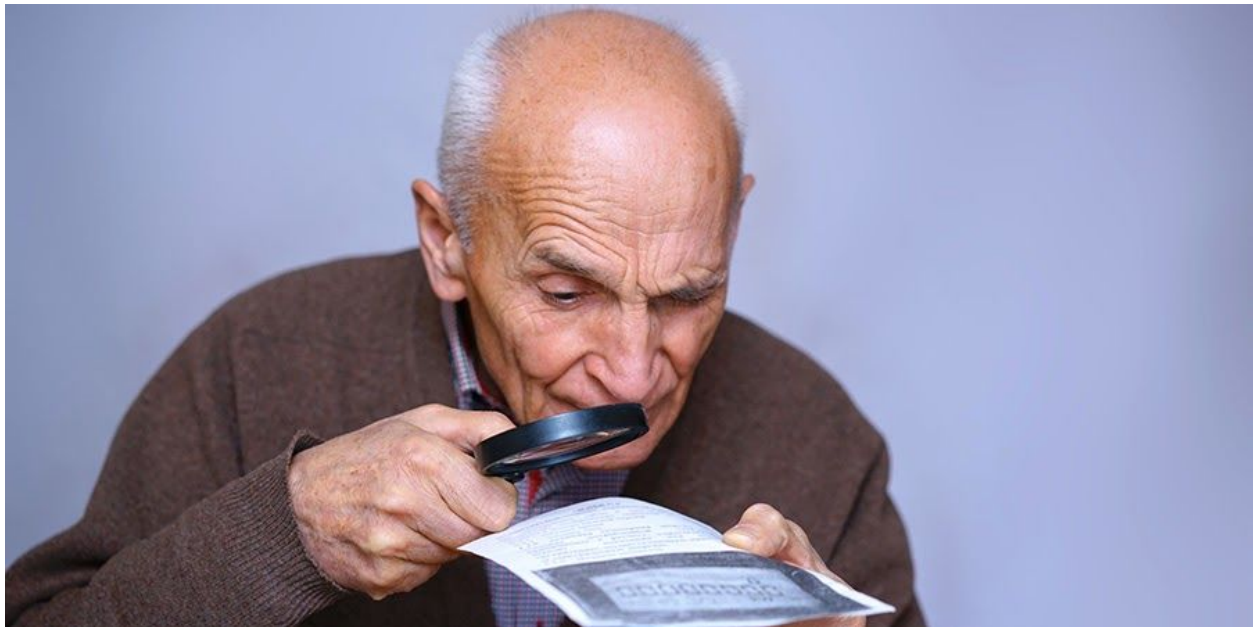


Low Vision and Vision Rehabilitation

Few people are totally without sight. Most people who are classified as "blind" actually have remaining sight. Thanks to developments in low vision rehabilitation, they can enhance their visual function and improve their quality of life.



Anyone with uncorrectable, reduced vision is visually impaired. Uncorrectable means vision that is not further improved by spectacles or contact lenses, it does not mean vision when not wearing glasses.

The World Health Organization uses the following classifications of visual impairment. When the vision in the better eye with the best possible glasses correction is:

- 20/30 to 20/60, this is considered mild vision loss, or near-normal vision.
- 20/70 to 20/160, this is considered moderate visual impairment, or moderate low vision.
- 20/200 or worse, this is considered severe visual impairment, or severe low vision.
- 20/500 to 20/1000, this is considered profound visual impairment or profound low vision.
- Less than 20/1000, this is considered near-total visual impairment or near-total low vision.
- No light perception, this is considered total visual impairment, or total blindness.

There are also levels of visual impairment based on visual field loss (loss of peripheral vision).

In the United States, any person with vision that cannot be corrected to better than 20/200 in the best eye, or who has 20 degrees or less of visual field remaining, is considered legally blind.

Visual impairments take many forms and exist in varying degrees. Visual acuity alone is not a good predictor of a person's vision problems. Someone with relatively good acuity (20/40) can have difficulty functioning, while someone with worse acuity (20/200) might not have any real problems performing daily activities.

What causes low vision?

Eye diseases or conditions can cause visual impairment. Below are some of the more common causes of low vision.

Macular degeneration

Macular degeneration is a disorder that affects the retina, the light-sensitive lining at the back of the eye where images are focused. The macula-the area on the retina responsible for sharp central vision-deteriorates, causing blurred vision. This can cause difficulty reading and, for some, a blurry or blind spot in the central area of vision.

The most common form of age-related macular degeneration is known as non-exudative, or the "dry" form, in which vision loss usually progresses slowly. More rapid and severe vision loss comes from exudative, or the "wet" form, of macular degeneration. In the wet form, abnormal blood vessels develop under the macula and leak fluid and blood.

Both exudative and non-exudative forms of macular degeneration are age-related. They are the leading cause of blindness in people over 50. Recent studies estimate that over 1.6 million older Americans have age-related macular degeneration.

The exact cause is unknown. Although age is the primary contributing factor, cigarette smoking and nutrition can also play a role in the development of age-related macular degeneration. A hereditary juvenile form of macular generation called Stargardt Macular Dystrophy can also cause vision loss.

Cataracts

A [cataract](#) is a clouding of part or all the lens inside the eye. This clouding interferes with light reaching the retina at the back of the eye, resulting in a general loss of vision. Causes include aging, long-term exposure to the sun's ultraviolet radiation, injury, disease, and inherited disorders. If the eye is healthy, a cataract can be surgically removed. Usually, an intraocular lens implant is inserted in the eye, and vision is restored. Cataract surgery has a high success rate in otherwise healthy eyes. However, cataract surgery is not always possible for people who also have other eye diseases. These people may require low-vision rehabilitation to maximize their remaining vision.

Glaucoma

[Glaucoma](#) causes damage to the optic nerve. Most commonly, this occurs due to increasing internal pressure in the eye because of problems with the flow or drainage of fluid within the eye. It can also occur when the internal pressure of the eye does not increase (normal-tension glaucoma), but there is not enough blood flow to the optic nerve. There are no early symptoms in the most common form of glaucoma, but the first signs of damage are defects in side (peripheral) vision and difficulty with night vision. If diagnosed early, it can be treated with drugs, or sometimes surgery can minimize vision loss.

Diabetic retinopathy

People with [diabetes](#) can experience day-to-day changes in their vision and/or visual functioning because of the disease. Diabetes can cause blood vessels that nourish the retina to develop tiny, abnormal branches that leak, called [diabetic retinopathy](#). This can interfere with vision and, over time, may severely damage the retina. Laser procedures and surgical treatments can reduce its progression but regulating blood sugar is the most important step in treating diabetic retinopathy.

Retinitis pigmentosa

[Retinitis pigmentosa](#) gradually destroys night vision, severely reduces side vision and may result in total vision impairment. An inherited disease, its first symptom-night blindness-usually occurs in childhood or adolescence.

Amblyopia

In [amblyopia](#), the visual system fails to develop normally during childhood. The blurry vision that results in one or both eyes is not easily corrected with normal glasses or contact lenses alone.

Retinopathy of Prematurity (ROP)

Retinopathy of prematurity occurs in infants born prematurely. It is caused by the high oxygen levels in incubators during the critical neonatal period.

Retinal detachment

With a [retinal detachment](#), the retina separates from its underlying layer. It can cause total vision impairment in the affected eye. Causes include holes in the retina, eye trauma, infection, blood vessel disturbance or a tumor. If diagnosed early, most detached retinas can be surgically reattached with vision partially or completely restored.

Acquired (traumatic) brain injury

Vision can also be lost or damaged as a result of [head injuries, brain damage and stroke](#). Signs and symptoms can include reduced visual acuity or visual field, contrast sensitivity, blurred vision, eye misalignment, poor judgment of depth, glare sensitivity, confusion when performing visual tasks, difficulty reading, double vision, headaches, dizziness, abnormal body posture, and balance problems.

Common types of low vision

Loss of central vision

The loss of central vision creates a blur or blind spot, but a person's side (peripheral) vision remains. This makes it difficult to read, recognize faces and distinguish most details in the distance. With side vision intact, however, mobility is usually unaffected.

Loss of peripheral (side) vision

People who lose their peripheral vision cannot distinguish anything to one side or both sides, or anything directly above and/or below eye level. Central vision remains, however, making it possible to see directly ahead, read and see faces. Typically, loss of peripheral vision affects mobility. If it is severe, it can slow reading speed because the person can only see a few words at a time. This is sometimes referred to as "tunnel vision."

Blurred vision

With blurred vision, both near and far vision is out of focus, even with the best possible correction with eyeglasses.

Reduced contrast sensitivity

People with loss of contrast sensitivity, have a loss of vision quality. They tend to feel that there is a generalized haze with a sensation of a film or cloudiness.

Glare light sensitivity

This occurs when standard levels of light overwhelm a person's visual system, producing a washed-out image and/or a glare. People with extreme light sensitivity may suffer pain or discomfort from relatively normal levels of light.

Night blindness

People with night blindness cannot see outside at night or in dimly lighted interior areas such as movie theaters or restaurants.

Low vision care

Some doctors of optometry specialize in low-vision rehabilitation. They examine and provide rehabilitation of patients with visual impairments.

Each type of low-vision problem requires a different therapeutic approach. After the doctor of optometry conducts a thorough examination, which will also include tests to determine the patient's doctor.

Vision rehabilitation maximizes visual functioning, so the patient can achieve their visual goals and improve the quality of their life. A patient's individual rehabilitation plan may include prescription glasses or contact lenses, optical and electronic magnification devices, assistive technology, glare control with therapeutic filters, contrast enhancement, eccentric viewing, visual field enhancement, non-optical options and referral for additional services with other professionals. These additional services may include a teacher of the visually impaired, assistive technology specialist, psychologist, social worker, occupational therapist, certified vision

rehabilitation therapist, orientation and mobility specialist, Activities of daily living instructor, vocational rehabilitation counselor, and support groups.

Low vision exam

During a low-vision exam, a doctor of optometry who provides low-vision rehabilitation will ask the patient for a complete personal and family-general health and eye history. In addition, the doctor will concentrate on the patient's visual difficulties, asking about how the visual impairment is affecting the patient's daily activities, computer use, reading, traveling, ability to recognize faces, functioning in the kitchen, driving, working, television viewing, attending school and participating in hobbies. The doctor will also screen for depression that is more common with vision loss. Low-vision doctors perform specialized refraction and thoroughly examine each eye. In addition, the doctors will measure the patient's visual acuity using special low-vision test charts. These charts include a larger range of letters or numbers to more accurately determine the level of vision impairment. They may also evaluate the patient's visual fields, investigate a patient's glare, contrast sensitivity and reading ability. At the conclusion of the evaluation, the doctor will create a comprehensive, individual rehabilitation plan based on the patient's visual abilities and goals. The vision rehabilitation will often happen over several visits to the clinic.

Low vision devices

A variety of rehabilitation options help people with low vision live and work independently, efficiently and safely. Vision rehabilitation can vastly improve the quality of life. Most people with low vision can benefit from one or more treatment options. Unfortunately, only about 20 to 25% of people who could benefit from these treatment options have seen a low-vision doctor of optometry.

Below are the more commonly prescribed devices.

Spectacle-mounted magnifiers

A magnifying lens is mounted in spectacles (this type of system is called a microscope) or on a special headband. Both hands are then free for close-up tasks, such as reading.

Handheld or spectacle-mounted telescopes

These miniature telescopes are useful for seeing longer distances, such as across the room to watch television. They can also be modified for near tasks, such as reading. Biotopic telescopes can be used for driving in most states.

Handheld and stand magnifiers

These are optical magnifiers that are convenient for quick reading of things like price tags, labels and instrument dials. Both types can include lights.

Electronic (video) magnification

Portable, tabletop or head-mounted systems provide magnification of images both at distance and near. Electronic magnification allows for variable levels of magnification, adjustment of image brightness, contrast, and change of foreground/background.

Assistive technology

Accessibility features on smartphones and computers allow people with visual impairment to full access to their technology. There are all screen readers/speech output and software enlargement programs.

Numerous other products can assist people with vision impairment

These include large-type books, magazines, and newspapers; books on tape; talking wristwatches; self-threading needles; and more.

Low vision rehabilitation

Low vision rehabilitation is the standard of care for people that have vision loss. If you, or someone you know, suffers from a vision impairment, ask your doctor of optometry about low vision rehabilitation. A doctor of optometry who provides low-vision rehabilitative services can help people with low vision regain their independence and improve their quality of life.

People with low vision can learn a variety of techniques to help them perform daily activities with their remaining vision. Government and private programs offer educational and vocational counseling, occupational therapy, rehabilitation training and more.

Since 1999, both the American Optometric Association and the American Academy of Ophthalmology have called for Medicare to cover low-vision rehabilitation services. Many Medicare carriers now have policies that cover some vision rehabilitation services. Ask your doctor of optometry's office about this type of coverage.

Help is available today. Find out from a [doctor of optometry](#) how low-vision rehabilitation can make all the difference in your daily life.

The Academy's Initiative in Vision Rehabilitation

Referring low-vision patients (those with visual acuities less than 20/40 or scotomas, field loss or contrast loss) to vision rehabilitation services connects them with services that lessen the impact of their vision loss, and improves their independence and quality of life. Joseph Fontenot, MD, Chair of the Academy's Vision Rehabilitation committee, led the production of the following six-minute video, titled "There is Something Else You Can Do." Introduced by David W. Parke II, MD, Academy CEO, this video emphasizes the impact of vision loss on the individual and the responsibility of the ophthalmologist to refer or provide vision rehabilitation. With advances in technology, modern vision rehabilitation can help most patients with any degree of vision loss. Provision of, or referral to, vision rehabilitation is now the standard of care for all who experience vision loss. [Click here](#) for a transcript of the video, courtesy of the American Foundation of the Blind. Additional information, including handouts for patients, can be found below.

Materials for Patients with Low Vision

This [handout](#) is for you to give to your patients with low vision. It provides essential tips for making the most of remaining vision and offers a list of resources where patients can locate local vision rehabilitation services using the "Help Near You" directory (if you do not have services or a referral system in place).

Vision Rehabilitation and Vision Loss Materials for Ophthalmologists

- [Levels 1 & 2](#) (PDF 46K). Level 1 calls on all ophthalmologists to recognize patients with low vision and share a copy of the patient materials. Please instruct and encourage patients to read and act on it. Level 2 encourages all general

ophthalmologists to add a few easy steps when examining patients. These steps are the four “R’s of Rehabilitation”: Record – Refract – Rx – Report.

- The Academy provides a [Vision Rehabilitation Preferred Practice Pattern \(PPP\) Guideline](#).
- Ophthalmologists can also use this [sample letter](#) (Word 21K) to make PCPs aware of a patient’s vision loss and the possibility of Charles Bonnet Syndrome.
- Medicare reimburses for a low vision evaluation by an ophthalmologist or optometrist.

If you have questions about the vision rehabilitation information on this page, contact the Academy via [e-mail](#).

VisionAware

The [VisionAware™ website](#) provides information about living with vision loss, including home adaptations, products, blogs, and connections to local services. The website includes a searchable directory of services available in the US and Canada for children and adults who are blind or visually impaired.

Note Regarding Reimbursement for Occupational Therapy Services

Medicare and most insurers will reimburse for vision rehabilitation provide by Occupational Therapists.

Refer Eligible Students for Spotlight Gateway Assisted-Reading App

Ophthalmologists may refer visually impaired students in the United States to a program that will provide them with free access to the Spotlight Gateway reading application for iPads. Ophthalmologists should submit [this form](#) for eligible students.

The Academy is participating in this program in collaboration with Lighthouse Guild, a nonprofit vision and health care organization, and Bookshare, the largest online library of books for people with print reading disabilities.

For more background on the program, read the Academy’s [news release](#) and Lighthouse Guild’s information about [Spotlight Gateway](#).

Introduction to Vision Rehabilitation

This course provides an understanding of vision impairment and the vision rehabilitation process. It is a 10-module self-paced course from the Lighthouse Guild, available in English and Spanish, that can be completed in approximately two hours. If you are university-based, check with your Department Chair to see if there is a designated code before logging on to the course. If you do not have a university-based code, access code AAOVR can be entered to enroll in the course. [Click here to register for the course](#)

Sources:

<https://www.aoa.org/healthy-eyes/caring-for-your-eyes/low-vision-and-vision-rehab?sso=y>

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