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Jeffrey C. Michaels
Richmond Eye & Ear Hospital

Mary D. Bullock
Richmond Eye & Ear Hospital

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Case Study: Low Vision in Older Adults

by Jeffrey C. Michaels, O.D. and Mary Bullock, OTR/L

Jeffrey C. Michaels, O.D., is the Director of the Richmond Eye & Ear Hospital Low Vision Rehabilitation Center in Richmond, Virginia. He lectures on low vision rehabilitation, the role of contact lenses in low vision, intraocular tumors, and age-related macular degeneration. Dr. Michaels is studying reading in persons with low vision; the effect of macular translocation surgery on low vision rehabilitation; the use of the scanning laser ophthalmoscope in low vision rehabilitation; and driving for the visually impaired. Dr. Michaels completed a one-year low vision research and clinical fellowship at the Lions Vision Research and Rehabilitation Center at the Wilmer Ophthalmological Institute at the Johns Hopkins University after graduating from the Michigan College of Optometry.

Mary D. Bullock, OTR/L, is the Occupational Therapist for the Low Vision Rehabilitation Service at the Richmond Eye & Ear Hospital. Her role is instructing patients on the best use of their remaining vision and teaching them to use optical and non-optical devices that will enhance their functional vision and safety for daily tasks. She has worked in the field of physical rehabilitation for 20 years and also received education and training in low vision from the Lions Low Vision Research and Rehabilitation Center.

Educational Objectives

1. Understand the epidemiology of visual impairments of older adults.
2. Understand the symptoms of functional loss secondary to visual impairments.
3. Understand the rehabilitative options available for those with vision loss.
4. Understand the multi-disciplinary approach in low vision rehabilitation.
5. Understand the impact of low vision rehabilitation services.

Background

Low vision is a permanent visual impairment that is not correctable with spectacles, contact lenses, or surgical intervention, and that interferes with normal everyday function.¹ It is estimated that there are at least three million Americans with low vision.²⁻³ Most people with low vision in this country are 65 years of age or older and have age-related macular degeneration (ARMD), diabetic retinopathy, cataract, glaucoma, or optic nerve disease. In the United States, ARMD accounts for almost 45% of all cases of low vision.³ The prevalence of low vision is highly age dependent; research has shown that visual impairments increase from less than 1% of persons 40 to 49 years old to more than 15% of those 79 years and older.³ It is widely accepted that the number of elderly will dramatically increase in coming decades; it is also expected that the number of elderly persons with visual impairments will increase. This increase demands a service that will meet the needs of patients and their functional complaints.

Low Vision Rehabilitation At the Richmond Eye & Ear Hospital, low vision rehabilitation encompasses many services that are coordinated between the optometrist and the occupational therapist. In our office, the optometrist performs a thorough evaluation that includes measurements for visual acuity, contrast sensitivity, reading speed, and visual field. A measurement of the spectacle prescription is also performed for both distance and near. Time is spent counseling the patient, family, and/or friends about the visual condition, ramifications of the visual impairment, potential for rehabilitation, and coordinating other services. These services may include orientation/ mobility, social work, blindness rehabilitation, occupational therapy, or vocational rehabilitation.

Occupational therapy is an intricate component of the successful rehabilitation of our patients. Many patients with low vision lose their ability to perform such routine daily tasks as reading mail, writing a check, or threading a needle. Our occupational therapist thoroughly evaluates the patient's present level of independence for these and many other daily living tasks. The goal of rehabilitation is to increase the patient's overall independence with everyday tasks that people with normal vision take for granted. During the first occupational therapy visit, rehabilitation options are discussed which are based on the patient's lifestyle, goals, eye condition, visual function, expectations, and motivation to reach desired goals. Often, goals are reached with the use of specialized optical devices that require instruction (e.g. telescopes, high power reading glasses, etc.), practice, and emotional adjustment on the part of the patient. The occupational therapist will teach the patient to optimize his or her remaining vision and to use the prescriptive optical and non-optical devices to increase the present level of independence. A major role of the occupational therapist is to inform patients with low vision about helpful resources in the community. Resources such as support groups, vocational rehabilitation, blind skills training, and home adaptive skills may all ease patients' adjustment to vision loss and aid in the overall quality of life.

Symptoms of Low Vision Both the causes and the manifestations of visual impairments are many. By far, the most common complaint of persons with low vision is difficulty in reading. This complaint may relate to newspapers, mail, bibles, medicine bottles, one's writing, a watch face, the telephone book, a menu, and similar common items. Other functional complaints include: not being able to identify faces at a distance, difficulty identifying markings on a stove dial, not being able to see one's own face in a mirror, not being able to fill out a check, difficulty identifying steps/curbs, difficulty seeing street signs while driving, difficulty passing a department of motor vehicles (DMV) vision test, falling over objects in the home, problems in navigating through unfamiliar territories, staying on the line when writing a letter, inability to distinguish words on a TV screen, not being able to see icons on a computer screen, difficulty judging distances, knocking over glasses on a table, and trouble in pouring liquids, to only name a few.

Case Report

Anita Help, a 79-year-old white female, reported to the Richmond Eye & Ear Hospital Low Vision Rehabilitation Center upon a referral by her ophthalmologist. Her chief complaints were difficulty in reading small print (her bible, mail, newspaper, and menus in restaurants), seeing faces from across the room, and worry that she would not be able to renew her driver's license on her birthday eight months hence. She reported a decrease in visual acuity in her left eye while watching TV during the last week.

Ocular history was significant for age-related macular degeneration in both eyes, and she had previously undergone laser treatment to stop bleeding in her right eye which resulted in a permanent decrease in visual acuity. She had previous cataract surgery in both eyes.

Medical history was significant for hypertension (controlled with Atenolol), history of smoking for the past 60 years, and arthritis (non-medicated); she was taking multi-vitamins daily.

Functional history showed that Mrs. Help lived alone in a house in the city, as she had for the past 45 years. Currently, she drives and uses a support cane for mobility. She uses several hand-held magnifiers that she purchased from the "dollar store" to assist her in reading, although recently they are not providing enough magnification. Mrs. Help is responsible for her own finances, cooking, shopping, and cleaning. She is retired, but volunteers at a local hospital's gift shop. Since the passing of her husband and her failing vision, she admits to being frustrated, anxious, and depressed. She has been under the care of an ophthalmologist for ARMD, although no treatment for the "good eye" is indicated. She has never received visual rehabilitation. For now, she is only being monitored.

Entering visual acuity was 20/300 in the right eye and 20/100 in the left (20/20 is "normal" vision and 20/200 is considered legally blind). Near visual acuity was 8.0M in the right eye and 2.5M in the left (newspaper print is approximately 1.0M). Contrast sensitivity testing measured 1.05 with both eyes (1.50 - 1.65 is the normal measurement for her age). Central visual field testing showed a large central scotoma (blind spot) in the right eye (consistent with the previous laser treatment) and a smaller scotoma in the left eye. Binocular vision testing showed that Mrs. Help favored the left eye. Fundus evaluation was significant for a large disciform scar in the right eye (secondary to previous laser treatment) and a neovascular membrane in the left eye (site of new bleeding secondary to ARMD).

Low Vision Rehabilitation Because rehabilitation is task oriented, we had to identify different interventions for each of her complaints. The most important goal for Anita Help was reading. We provided her with a 4X microscope that would allow her to read newspaper print without the chore of holding a magnifier; this would allow her to hold the newspaper under a halogen light for optimal reading conditions. This 4X microscope, which looks like conventional glasses, requires Mrs. Help to hold reading material only a few centimeters away from her eyes. In order to become acclimated to this new close "working distance," she worked with our occupational therapist for a one-hour session. This session included training with her new glasses, education for ways to improve reading performance, training for how to use her vision to its potential, and a demonstration of large print checks (because Mrs. Help had difficulty staying on the lines when filling out her standard size checks).

With regard to devices for reading, there were several options available to Mrs. Help. We could have provided her with hand-held magnifiers, a closed circuit television (reading machine), or other adaptive devices. Because Mrs. Help had arthritis, she found it difficult to hold a magnifier for a prolonged period of time. Therefore, we provided her with a device that does not need to be held in the hand (the glasses rest on her nose like a standard pair of spectacles).

Patients with ARMD, like Anita Help, suffer from reduced contrast sensitivity. How well something "stands out" is an example of its contrast. For example, black print on a white background is excellent

contrast. Unfortunately, for printed material like a newspaper, the print is dark gray on a light gray background. This is an example of poor contrast and is the etiology of many complaints by persons with impaired vision. Measuring contrast is probably the single most important indicator of functional loss (compared to visual acuity, visual field, etc.). Persons with reduced contrast sensitivity require increased lighting to improve function. While we can suggest proper lighting for the patient in his or her home, conditions outside the home pose another challenge. Restaurants and churches usually offer inadequate lighting for these people. We often have to recommend portable lighting for these situations (e.g., flashlights, illuminated magnifiers).

Anita Help's vision is 20/100 in the better eye. In the Commonwealth, state law requires vision to be 20/40 for unrestricted driving privileges. Drivers may, however, use a bioptic telescope to drive. A bioptic telescope is a magnifier mounted into one's spectacles that can provide distance magnification. Through training, a person can learn to use the telescope with relative ease and incorporate it into daily life. This device can help one to identify faces at a distance, read signs, and see a clock face from a greater distance. The Commonwealth does require that the best corrected vision without the telescope (spectacles only) to be better than 20/200 and the correction with the telescope to better than 20/70. In Anita Help's case, her left eye was 20/100, which is within state law for bioptic use. A 2.2X telescope corrected her to 20/50, which is also within state law. Extensive training in our office with the use of this device over three months assured that Anita Help had the skills necessary to pass an DMV road evaluation.

Conclusion

Our low vision service was able to meet the many functional needs of Anita Help. While she was not eligible for any medical/surgical intervention, we were still able to improve her quality of life. This is what low vision care is all about. It is important to note that Anita Help will remain under the care of her ophthalmologist. She has an ocular condition that requires constant evaluations of her eye health. Given the active bleeding process in Mrs. Help's left eye, the ophthalmologist can provide special testing that is imperative to her management. Anita Help had a very common eye disease found in the elderly--age-related macular degeneration. Other conditions that result in functional complaints can be managed in a low vision service as well. These include: diabetic eye disease, glaucoma, traumatic brain injury, and cerebral vascular accident. Mrs. Help was referred to our service by her ophthalmologist, although a referral by a doctor is not necessary. Patients often refer themselves.

Anita Help's visual acuity (the most common test used to measure vision) was 20/200 and 20/100 in the right and left eyes, respectively. Functional complaints (difficulty reading small print, seeing faces, and watching TV) occur with vision as "good" as 20/50. These complaints can easily be managed in a low vision service.

The Richmond Eye & Ear Hospital Low Vision Rehabilitation Center is located at 1001 E. Marshall St. in downtown Richmond, across from the campus of the Medical College of Virginia. Our office can be reached at 804/775-4513.

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