We Have the Technology, But Are We Truly Ready to Fully Care for the Growing Number of Needy Low Vision Patients in Our Society?

1992

Jeanne Smithbauer
Senior Research Project

Dr. C. A. Uniacke
Advisor

OUTLINE

I. A student's guideline to performing a low vision evaluation

Purpose: Given the time span between Ferris Optometry students' low vision classroom education and when they are actually seeing patients in the clinic, I feel that a short "quick reference guide" of procedures may help students feel more confident, and thus more comfortable, in dealing with the low vision patient.

II. A review of recent publications and research into some of the factors that provide successful rehabilitation and integration of the low vision patient

Purpose: To help educate optometrists as to their expected role as a primary care practitioner in dealing with the low vision patient.

A Student's Quick Reference Guide to the Basics in Performing a Low Vision Evaluation

Low Vision Case History

"What is your reason for coming here today?" may give you a feel for the patient's expectations and psychological state, however, it is also necessary to ask more specific questions such as "What activities have you given up because of your vision?" to determine what particular area you will need to focus on during your exam (e.g. reading, writing, watching TV, driving).

Low Vision Refraction

For distance testing, use a projected Snellen chart only if 20/100 vision or better (because the next step on the projected chart is 20/200 and many patients' vision tests somewhere in between, e.g. 20/160 or 20/180). Use a distance acuity chart such as the Feinbloom (Designs for Vision). If no response at 20 feet, try 10ft, 5ft, and 3ft. (This employs the principle of relative distance magnification, that is, the closer the object is, the larger the image on the retina.) Never record "counts fingers @ 3ft" since the angular subtense of fingers is approximately equal to 3/100 or 3/200. Thus, you should be able to get a response on the Feinbloom chart. From a functional standpoint, it is also important to record the room illumination level that the acuity was best in. Halberg clips over the current Rx for high powered spectacles helps by factoring out a change in base curve or vertex distance when recording subjective acuity. Trial frame refractions for VA less than 20/200 is preferred over the phoropter for subjective response since it allows for eccentric eye and head positions. When recording acuities, note if the patient is using an eccentric posture. Try to encourage eccentric gazing in persons with a known central field loss. If no chart acuity is obtainable, determine the patient's ability to see 1) hand motion 2) light projection or 3) light/no light perception. Remember: some patients have not had a refraction change in years, so be sure to determine that large amounts of refractive change have not been overlooked. Also remember to keep in mind the patient's sensitivity to changes--a 20/200 patient will not respond to a +.25/-.25 JCC, try a +1.00/-1.00 JCC.

Near VA and Aids

Have the patient demonstrate where he reads and watch if the patient is at the proper focal distance of the lens (e.g., with a +5.00 add, the patient should be reading at 20cm). If not, retrain the patient on the proper focal distance. If the near chart is clear at a distance other than the focal point of the Rx, and if the patient is an absolute presbyope, then consider uncorrected myopia/hyperopia at distance. If the patient has accommodative ability and wants to hold the chart closer, consider the added benefit of relative distance magnification. To calculate a starting point for the necessary near dioptric magnification needed to see newspaper/magazine size print, 1M (20/40 to 20/50 distance equivalent), divide the numerator of the distance visual equivalent by the denominator, or even more simply, multiply your M measurement by 2.50D if testing at 40cm. As a rule of thumb, use the minimum add necessary for the patient to read 1M print since the field of view decreases with increasing magnification.

For reading, spectacles are commonly prescribed. The advantages are a relatively good field diameter and a freeing of the hands, but patients frequently complain about the short working distance and have difficulty obtaining the proper lighting.

With hand magnifiers, use the patient's distance Rx, have the patient place the magnifier on the page and raise until it is clearest. Demonstrate eye to lens variablility: same magnification, but increased field of view as the eye is moved closer to the lens. This last principle also holds true for stand magnifiers. Hand magnifiers are useful for quick spotting tasks such as label/price checking while shopping or determining stove settings at home.

With stand magnifiers, the patient usually needs to use a conventional bifocal and a clipboard or tabletop to hold reading material steady.

Be sure to consider the patient's physical conditions when choosing a near aid, e.g., a Parkinson's patient would probably do much better with a stand magnifier than with spectacles. Reading telescopes should be considered for tasks requiring greater working distance, such as reading sheet music while playing a musical instrument.

Telescopes for Distance

As a rule of thumb, try a 2.5x for acuity 20/100 or better, since it should theoretically improve the patient's VA 2.5x (thus, the 20/100 patient should see 20/40). For VA 20/150 to 20/300, try 4-6x telescopes, 20/300 to 20/600, 8-10x.

For driving, consider the patient's ability to manage spotting, good peripheral visual fields, lighting conditions that the patient is able to function in, and a 20/100 conventionally correctable VA is recommended.

Non-Optical Aids

Consider illumination: incandescent bulbs are usually preferred since they decrease the amount of blue light output, which can scatter. Gooseneck lamps are good for directing the light over the patient's shoulder and onto the reading material and out of the patient's eyes.

Contrast inhancers: try absorptive filters such as yellow lenses or yellow acetate filters on the reading material. Have the patient use a black fiber-tipped pen for correspondence.

Reflection control: Recommend brimmed hats for outdoors, side shields, tints/polaroids, and typoscopes (black line guides).

Linear magnification: Consider large print publications (New York Times and Reader's Digest) Large print books generally need 20/80 to 20/100 VA.

For the record, record the patient's objective and subjective responses to all aids to help you determine what you will recommend to the patient. Remember that although there are formulas, they are only useful as guidelines--each patient, and each patient's eye condition(s), is unique. Trial and error are expected in this field, so be patient, review your results and, above all, listen to your patient.

Good luck!

References:

Cinical Low Vision
Eleanor E Faye, M.D.

The Art and Practice of Low Vision
Paul B. Freeman
Randall T. Jose

With the continuation of improvements in health care, the number of persons with visual impairments in our society will continue to rise. According to the World Health Organization's 1987 estimates, there are 27 to 35 million blind persons in this world with at least an equal number of low vision persons. (1) Obviously, there is, and will continue to be, a growing need to provide the care needed for these patients to become adapted members of our society. In addition to the need for more caregivers, because today's legally blind person is more "complicated", e.g., premature infants, the elderly and diabetics with multiple impairments, more professions are becoming involved and, thus, must learn to work together in order to best serve the patients' needs. Furthermore, the patient and society at large must be educated in the availability of low vision services and informed that the technology today gives legally blind persons adaptative options that they did not have a decade ago. (2) As primary care optometrists, it is our responsibility to inform the patient and their family as to the options/benefits available to them.

Statistics today indicate that 80% of legally blind persons have usable residual sight (2,3) and thus should be made aware of the benefits of today's low vision evaluations. Unfortunately, ignorance still widely exists. Only in working together as a multidisciplinary team can we hope to accomplish our goal of caring for the visually impaired person as a whole rather than simply treating the patient's eyes. As one of the many arguments for the possible benefits of a good low vision evaluation, some studies have concluded that one of the major problems in low vision and legally blind children's problems in motor development and social adaptation has been the lack of self-confidence and opportunities to obtain the necessary visual feedback and modeling. (4,5,6) Obviously, these children should be evaluated for the use of low vision devices and provided with training in their use at an early age. However, there seems to be several current obstacles in getting the child to this point.

First, lay persons and the professionals who work with the child are often ignorant of the benefits of low vision evaluations. In fact, some of the "teachers" for the visually handicapped are not

even certified. (7)

Next, schools often budget for large print textbooks for students with low vision instead of providing low vision evaluations and aids even though it has been shown that optical devices would be more cost effective on a per-child basis. Furthermore, studies have concluded that the reading rates of children with optical devices were capable of reaching a higher level than large print readers. Moreover, most children expressed a positive subjective response in being able to read and have access to the same books as their normally-sighted peers. (8,9,10,13)

The next obstacle seemed to be the teachers' unfamiliarity, and therefore uncomfortableness, with low vision devices. Obviously, education is not only necessary for the lay person, but for the interdisciplinary team members as well. Furthermore, even when there was an educated resource teacher working with the special education teacher, students only seemed to mainstream well when there was a good relationship between the two professionals, and when their focus was on the child's social-emotional

adaptation.(14) Obviously, multidisciplinary team members must learn to work together rather than remaining mutually exclusive in order to best meet the patient's needs. Along these same restrictive lines, some teachers were advocating the use of large print books because when they compared reading rates of a child with large print to a child with a new low vision device, reading rates were, in fact, better with large print. (8) As mentioned before, studies have shown that students with low vision devices do better than large print readers, but only after the child has mastered the use of the low vision device through training and practice. The teacher must be made aware that until the child has mastered the use of the device, one cannot make an unbiased comparison with the reading rates of children using large print. Moreover, if not for the goal of increasing reading rate levels and comprehension, teachers should encourage the use of low vision devices so that the visually impaired person is not ultimately limited to, or inconvenienced by, the need to obtain large print. Obviously, the best possible integration would include access to all normal print materials if possible.

Finally, and perhaps most perplexing, is the dissociation of medical eye care and the provision of low vision services, and the poor intra-professional referral rate. One study of 145 departments of ophthalmology in the United States revealed that only 25.4% of the departments provided low vision examinations, training, follow-up and referrals to support services. (11) Furthermore, in a survey of optometrists specializing in low vision, it was found that only 60% routinely refer for social services and rehabilitative training, only 57% refer for independent daily living skills instruction, and only 53% for orientation and mobility training. (12) This demonstrates our failure in the area of integrated multidisciplinary care.

Another perhaps more important concern for the low vision examiner is the failure rate with optical devices once they have been prescribed. High failure rates have been recorded with more complicated lens systems, such as telescopic spectacles, most likely because of a lack of patient education and training. Although one study did correlate involuntary head movements with the non-successful users, orientation and mobility instructors

involved in this same study noted that some of the patients may have benefitted from further training. (13)

Various studies have shown that specific training in the use of low vision aids has significantly increased the success rate (14,15,16), however, few studies have been published in this area and the need for more research into what training programs seem to result in the highest low vision device success rate is obviously warranted. We need to give these patients every possible opportunity for independent living and a feeling of self-confidence and societal worth. In one study of successfully mainstreamed visually impaired persons, almost all subjects attributed their success to external sources such as teachers, educated and supportive lay persons, and other multidisciplinary team members. (17) Most visually impaired persons do not want to be viewed as "handicapped". They have goals and dreams similar to their normally-sighted peers. In fact, studies have shown that visually impaired persons have interests in a wide range of careers, however, many do not end up in an area of interest simply because of lack of knowledge of the careers open to them

and the lack of assistance in exploring career opportunites commensurate with their abilities, preferences and circumstances. (18)

In conclusion, as the number of challenging low vision patients continues to rise, success will involve "more than simply prescribing low vision devices...Effective care includes instruction and often adaptive training, communication with other professionals, and referral to support services. Studies report a visual rehabilitation success rate of over 80% for patients previously considered 'hopeless'. Both the team approach and positive attitudes have been essential contributions to this success." (19)

Even if you are not a low vision specialist, being a primary care optometrist today mandates that you be educated in, at the very least, the appropriate referral for patients needing further care. In addition to knowing a low vision specialist in your area, you should become aware of what other professionals can provide for the patient, e.g., special educators, rehabilitation and mobility instructors, and occupational therapists.

Have information on hand (or readily available) on federal, state, local and private agencies, such as the Commission for the Blind, for patients to become aware of their options. "Our best hope for the future lies in education--to develop skills and cooperation amoung low vision care providers, to provide clear information to low vision persons and their family and friends, and to inform the public of the benefits of low vision care." (1)

References

1) World Health Organization. (1987). Available data on blindness (Update 1987). Geneva: (Document WHO/PBL/87.14)

2) Mulholland, M.E. and editors (1992). In this issue. Journal of Visual Impairment and Blindness, 86, 3.

3) Daugherty, K. & Morgan, M. (1982). Neurological, learning and developmental characteristics of the low vision child. Journal of Visual Impairment and Blindness, 76, 398-406.

Hill, E., Dodson-Burk, & Smith, A. (1989). Orientation and mobility for infants who are visually impaired. RE:view, 21(2), 47-60.

Jackson, R. (1978). Preliminaries in a theory of practice with low vision children and youth. Dissertation Abstracts International, 39, 3514-A. (University Microfilms No. 78-22, 053).

Kirchner, C., Peterson, R., & Suhr, C. (1979). Statistical Brief 6: Trends in school enrollment and reading methods amoung legally blind school children, 1963-1978. Journal of Visual Impairment and Blindness, 73, 373-377.

Soll, D. (1973). Vision care for the partially sighted child. New England Journal of Optometry, 24, 202-205.

Uslan, M. (1983). Provision of orientation and mobility services in 1990. Journal of Visual Impairment and Blindness, 77, 213-215.

4) Griffin, H. (1981). Motor development in congenitally blind children. Education of the Visually Handicapped, 12, 106-111.

5) Warren, D. (1984). Blindness and Early Childhood Development 2nd Edition, New York: American Foundation for the Blind.

6) Leonard, J. and Newman, R. (1967). Spacial orientation and the blind. Nature, 215, 1413-1414.

7) Corn, A.L., R.K. Silberman and V.M. Sowell (1988). A profile of teacher educators and the future of their personnel preparation programs for serving visually handicapped children and youth. Journal of Visual Impairment and Blindness, 83, 150-155.

8) Koenig, A.J. and D.B. Ross (1991). A procedure to evaluate the relative effectiveness of reading in large and regular print. Journal of Visual Impairment and Blindness, 85, 198-204.

9) Goldie, D., S. Gormezano and P. Raznik (1982). Comprehensive low vision services for visually impaired children: A function of special education. Journal of Visual Impairment and Blindness, 80, 844-854.

10)Corn, A. and G. Ryser (1989). Access to print for students with low vision. Journal of Visual Impairment and Blindness, 83, 340-349.

11)Giese, M.J. (1990). Low vision practice in departments of ophthalmology. Nashville: Academy '90, 109.

12)Lightman O.D., J.M. (1990). American Optometric Association Low Vision Section geriatric optometry questionnaire. Nashville: Academy '90, 199.

13)Eaglstein, A. and S. Rapaport (1991). Prediction of low vision aid usage. Journal of Visual Impairment and Blindness, 85, 31-33.

Hofstetter, H.W. (1991). Efficacy of low vision services for visually impaired children. Journal of Visual Impairment and Blindness, 85, 20-22.

Porter, F.I., J.M. White, J. Goldberg, J.L. Demer and A. Koval (1991). Predicting successful low vision rehabilitation with telescopic spectacles. Journal of Visual Impairment and Blindness, 86, 29-32.

14)Erwin, E.J. (1991). Guidelines for integrating young children with visual impairments in general educational settings. Journal of Visual Impairment and Blindness, 85, 252-260.

15)McMahon O.D., T.T. and M. Hansen M.A. (1991). An objective measure of the effect of low vision rehabilitation on reading rate. Anaheim: Academy '91, 63.

16)Turco O.D., P.D., F. Nason LICSW, P. McCabe M.P.H., J. Seddon M.D., E. Corpt Lic.S.W., J. Hollenbeck OTR, and J. Brandt (1991). Functional outcome of low vision rehabilitation. Anaheim: Academy '91, 137.

17)Rosenbloom, A.A. (1992). Low vision: The next decade. Journal of Visual Impairment and Blindness, 86, 5.