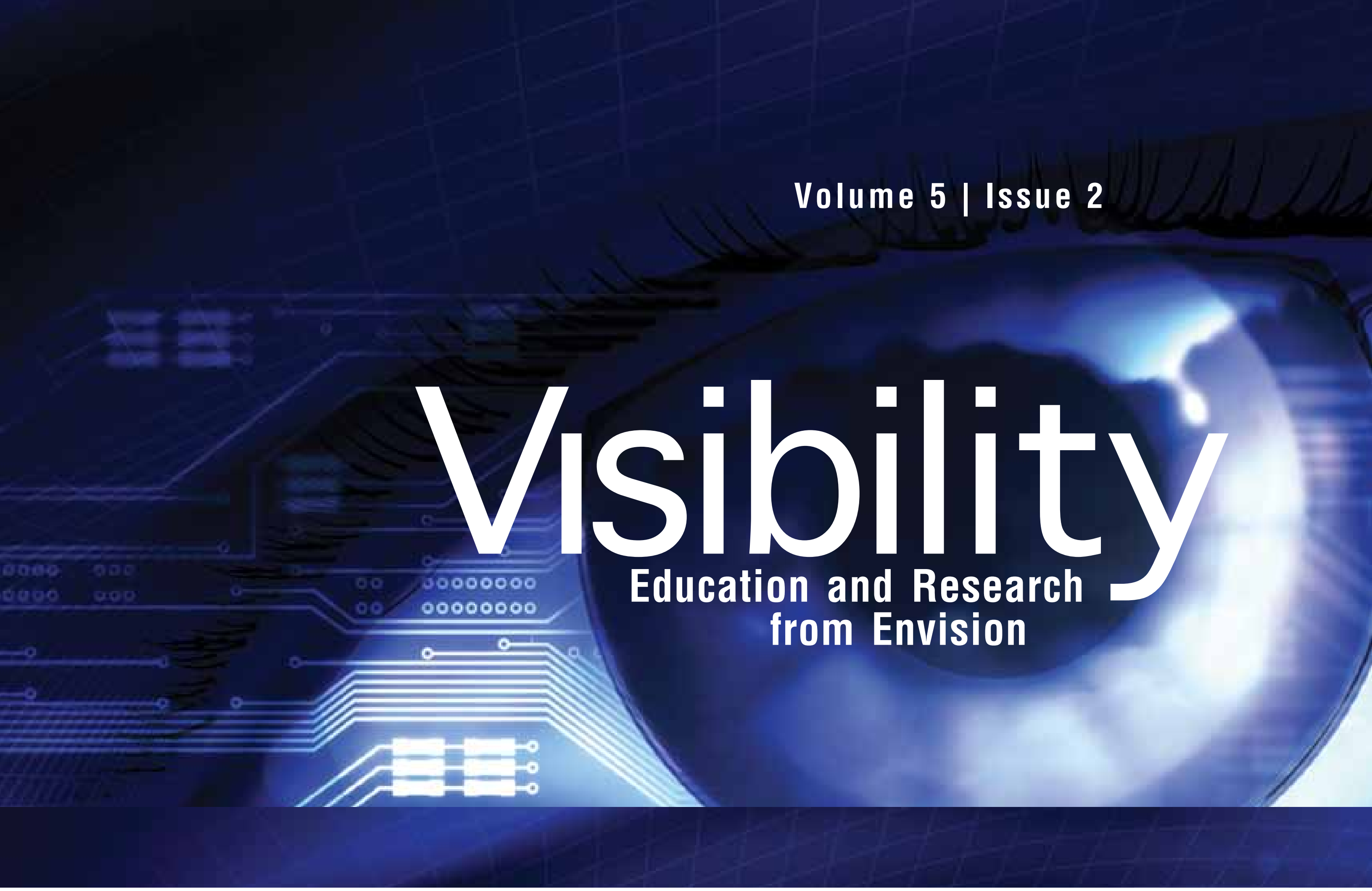

Eye Charts 102: Challenges with Current Recommended Eye Charts

P. Kay Nottingham Chaplin, EdD
Geoffrey E. Bradford, MD

Why is a standardized eye chart important? Simply stated, charts designed to meet rigorous standards permit the most accurate initial assessment of visual acuity, as well as an accurate comparison of later visual acuity results conducted by the same or different practitioners.[1]

For example, a child does not pass a vision screening at a pediatrician's office conducted by a medical assistant or nurse using a poorly designed eye chart. However, when the child is referred to an eye care professional, the child passes the visual acuity test conducted by a technician using a well-designed chart that conforms to recommended standards. If this scenario occurs regularly, the pediatrician's false positive rate increases. The eye care professional may begin to mistrust the accuracy of referrals from the pediatrician's office. The child's parent/caregiver may become upset as a result of taking time off from work for an eye exam that was normal. Conversely, a poorly designed chart could also fail children with real vision problems who would benefit from further evaluation from an eye care professional.

In the last issue, Part One of this article (PKNC)[2] described national and international standards to optimize eye chart design and

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ABOUT ENVISION FOUNDATION

The mission of the Envision Foundation is to secure funding for the successful delivery of services offered by the Envision Vision Rehabilitation Center and the education programs of the Foundation. Envision Foundation focuses on fundraising to ensure that no patient is ever turned away—regardless of ability to pay; public education to help prevent blindness; and professional education to determine best practices in order to serve patients who are blind or low vision.

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Eye Charts 102: Challenges with Current Recommended Eye Charts continued from front page

discussed two commonly used eye charts in pediatric practices that fall short of these standards. Part Two:

- Reviews six eye charts recommended in the 2003 national consensus policy statement of the American Academy of Pediatrics (AAP), American Association of Certified Orthoptists (AACO), American Association for Pediatric Ophthalmology and Strabismus (AAPOS) and the American Academy of Ophthalmology (AAO);[3]
- Describes shortcomings associated with five of the six charts;
- notes one of the six eye charts that falls within the framework of the national and international standards;
- Provides a better alternative for the typical "Snellen" chart used by many pediatric practices across the United States for older children and which, although widely used, is hindered in its accuracy to test vision because of flaws in its design.

For a refresher, the Committee on Vision of the National Academy of Sciences - National Research Council (Committee on Vision) in 1980,[1] the International Council of Ophthalmology (ICO) in 1984,[4] and the World Health Organization (WHO) in 2003[5] recommended six similar eye chart design features to help achieve standardization:

1. Optotypes as equal in legibility as possible.
2. Equal number of optotypes per line (the Committee on Vision[1] recommended 10 optotypes that could be displayed in two rows of five; the ICO[4] and the WHO[5] recommended five optotypes per line).
3. Horizontal spacing between optotypes equal to the width of optotypes on that line.
4. Vertical spacing between each row equal to the height of optotypes in the smaller row.
5. Geometric progression of optotype sizes in mathematically uniform steps of 0.1 log units between rows.
6. Black optotypes on a white background under good lighting conditions.

The Committee on Vision further suggested that charts used for vision screening should conform to these same standards as tests for full clinical visual acuity.[1]

In 2003, a national consensus statement from the AAP, AACO, AAPOS and AAO[3] recommended six eye charts for pediatricians to use when screening the vision of infants, children and young adults. The charts are Snellen letters, Snellen numbers, Tumbling E, HOTV, Allen figures and LEA Symbols.

The six charts were chosen based on their popular use by pediatric eye care professionals, and not in relation to published standards for eye chart design. Challenges to five of the six eye charts are described below according to how they are listed in the consensus statement.

SNELLEN LETTERS

Challenges to the Snellen letter charts include:[6-9]

1. Unequal optotype legibility.
2. Variable number of optotypes per line. Incorrectly identifying two optotypes on a line of three optotypes, for example, is different from misidentifying two optotypes on a line of seven or eight optotypes.
3. Non-standardized horizontal spacing between optotypes.
4. Non-standardized vertical spacing between lines.
5. Unequal progression of optotype sizes between lines.
6. Non-standardized term for "Snellen chart". Charts may differ among manufacturers for font, letters and spacing ratios.

A better alternative for "Snellen charts" is a Sloan Letters chart, which conforms to the recognized standards.[10]

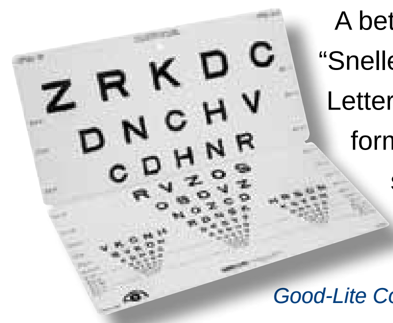

Figure 1. *Sloan Letters. Graphic courtesy of The Good-Lite Company (Elgin, IL)*

SNELLEN NUMBERS

Challenges to the Snellen numbers are similar to those listed for Snellen letters.

TUMBLING E

Challenges to Tumbling E charts include a young child's inability to identify the orientation of the E, a child's ability to correctly guess the direction of the optotype at threshold (the smallest line where the majority of optotypes can correctly

continued on next page

be identified) even when her vision is too blurred to see it clearly, and high untestable rates in 3- and 4-year-old children.

The Tumbling E requires young children to correctly orient and identify the direction of each E when facing the chart. However, orientation and direction are emerging cognitive skills that vary among children and may not be fully developed until age 8 or older.

Describing direction challenges, Ffooks[12] in 1965 wrote, "The E-test . . . needs a reasonable level of intellectual development, and is often difficult to use at those ages at which it is most often required—around the age of 3 years. The E-test depends on the accurate development of spatial orientation by the child, and spatial orientation is often not fully developed at this age. The positions of up and down are much easier to learn than right and left, and because of this, the right and left positions of the E may not be properly interpreted by the child, even if they are recognized. Interpretation of the test by the examiner must therefore be difficult and inaccurate." (p. 312)

Challenges to the Tumbling E were cited as early as the late 1800s. In 1886, Ewing[13] described the difficulty he experienced in persuading children ". . . to name the position of the Snellen E or to hold its duplicate in the hand in the same direction as the character on the chart." (p. 11)

In addition to this orientation challenge, the Tumbling E's accuracy is also impaired by one's ability to correctly guess the direction of the E at threshold, even when vision is blurred. For example, describing the ability to guess the direction of the E at threshold, Hyvärinen and colleagues[14] wrote in 1980, ". . . when the E symbol is blurred to the point of being barely perceptible, it is seen as a dim C and the direction of E symbol can be guessed by estimating which side of the symbol is lighter." (p. 509)

The WHO[5] recommended Tumbling Es as acceptable optotypes, but with a caveat that even children with blurred vision may be able to pass the test. Snellen[15] also warned against using optotypes that could be guessed, writing, "Everything which might facilitate guessing at the shape of the figures must be avoided." (p. 519)

Lastly, Hered and colleagues[16] reported that 284 children aged 3 and 4 tested with the Tumbling Es had a high untestable rate of 46 percent and, as such, suggested the test is of limited value in this age group.

HOTV

Eye charts with HOTV optotypes in a format complying with national and international eye chart design guidelines appear to be acceptable for screening and examining the vision of preschoolers. Sheridan[17] included the letters H, O, T and V in her original set of nine block letters because the letters were familiar to young children and could be easily copied by them. HOTV letters have left-right symmetry, which overcomes right-left directional confusion challenges, and most charts include lap cards for matching the optotypes. An HOTV chart achieved a 98.6 percent testability rate for 1,253 Head Start children in the Vision in Preschoolers Study.[18]

However, results of a recent study by Candy and colleagues[19] challenge the notion that HOTV letters are appropriate optotypes for preschool vision screening charts. These authors found that HOTV optotypes, which at any given acuity level should be approximately equal in difficulty or discriminability,[1] actually differed significantly in their similarity to each other. One optotype should not be easier or more difficult than another to identify on any given line. Candy et al further suggested that acuity measured with HOTV optotypes does not compare well with acuity levels obtained using the Landolt C test, an international optotype against which acuity results from other standardized optotypes are measured. Average visual acuities were significantly better than the Landolt C by at least one chart line, suggesting that the HOTV test may miss some children who actually have blurred vision.

ALLEN FIGURES

The Allen figures were described in literature in 1957.[20] Today, it is another of the six charts that does not conform well to international and national eye chart design standards. Allen figures are culturally biased, poorly sized, overestimate visual acuity, do not blur equally and suffer from cognitive challenges when used with young children. For example, many children today would not recognize the antiquated telephone optotype in the Allen figures.

Because the size of the Allen figures[21] does not conform to current standards, they tend to overestimate visual acuity. For example, Lueder and colleagues[22] found that Allen figure testing in adults was 1.5 lines better than Snellen letter acuities and 2.5 lines better in visual acuities of 20/70 and 20/200, suggesting that a child's visual acuity measurement could overlap erroneously into the normal range. This has implications for those children who require 20/70 vision to receive vision services as part of their Individualized Education Program.

Candy and colleagues[19] found that Allen figures differed significantly in their similarity to each other, noting that study participants correctly identified the Allen figures nearly 100 percent of the time. They further suggested that Allen figures could be improved in how the average visual acuity scores compared with the Landolt C (international reference optotype) scores.[19]

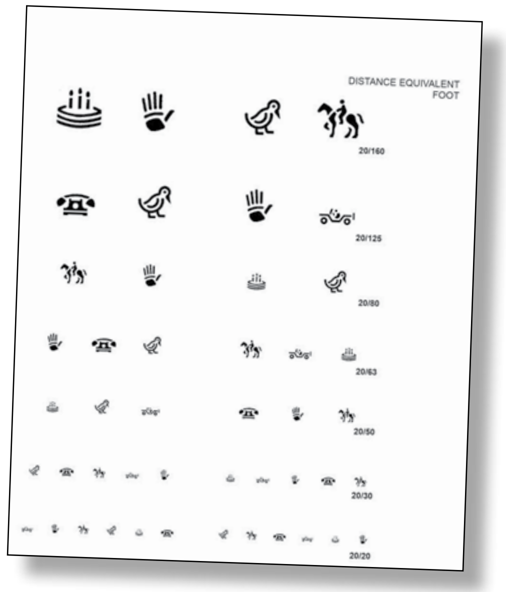

Figure 2. Allen figures. Graphic courtesy of The Good-Lite Company (Elgin, IL)

Another shortcoming of the Allen figures involves a requirement to discern a complete figure from an abstract figure to correctly identify the optotype. Developmentally, Allen figures require representational thinking, which emerges throughout the preschool years.

Allen,[20] in describing his test in 1957, noted his test was not designed to replace two eye charts that were popular at that time. Specifically, Allen wrote, "The test is not intended to replace, but to complement, existing tests like the illiterate E and the Sjøgren hand. It is recognized that the latter tests are undoubtedly superior and better standardized for children who can use them." (p. 40)

LEA SYMBOLS

LEA Symbols were described in 1980 by Hyvärinen, Näsänen and Laurien.[14] Proportional eye charts with these optotypes conform to the national and international standards. Additionally, LEA Symbols were calibrated against the Landolt C[14], are similar in ease to discriminate from each other,[19] have left-right symmetry to overcome directional challenges, include a lap card for matching, blur equally at threshold to limit inappropriate guessing,[14] are culturally neutral (children choose their own names for the circle, square, house and apple) and are shown to be effective optotypes for screening the vision of young children.[16,18,23]

Along with an HOTV chart, the LEA Symbols were also tested in the Vision in Preschoolers (VIP) Study. LEA Symbols were found to have a similarly high testability rate (98.8 percent) among 1,253 Head Start children ages 3 through 5.[18] The study authors also noted that LEA Symbols may be easier than HOTV letters for 3- to 5-year-old children to identify, and that 3-year-old children often demonstrated poorer visual acuity when tested with HOTV letters as compared to LEA Symbols.[18]

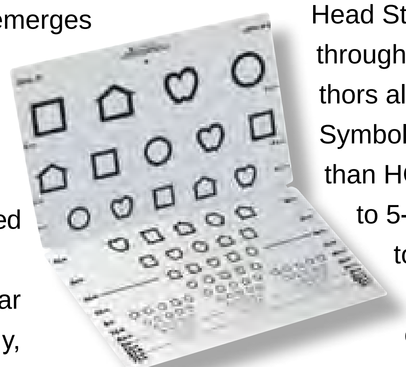

Figure 3. LEA Symbols. Graphic courtesy of The Good-Lite Company (Elgin, IL)

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In another study comparing testability rates with HOTV letters and LEA Symbols, Hered and colleagues[16] found that 15 percent of 319 children aged 3 years were untestable with HOTV letters as compared with an eight percent untestable rate for 3-year-olds with LEA Symbols. This difference was statistically significant (P = .05).

CONCLUSIONS

Candy and colleagues[19] noted that differences in optotype design "are likely to have a significant impact on children's performance" in vision screening (p. 11). This review notes that shortcomings exist in eye chart design associated with five of the six eye charts currently recommended in the AAP, AACO, AAPOS and AAO national consensus statement:[3] Snellen letters, Snellen numbers, Tumbling E, HOTV and Allen figures. Of the four eye charts recommended for young children, this review suggests that the most acceptable is a standardized chart with LEA Symbols. Moreover, Sloan Letters formatted in compliance with the national and international eye chart design standards can provide a better assessment of acuity in older children as compared to "Snellen" charts.

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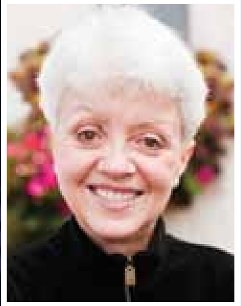

P. Kay Nottingham Chaplin, EdD, directed the West Virginia University Eye Institute's Vision Initiative for Children and conducted 178 preschool vision screening workshops for 1,600+ individuals, including pediatric primary care providers, between Valentine's Day 2001 and Halloween 2008. Dr. Chaplin is Director of Vision and Eye Health Initiatives at Good-Lite.

Approach to Low Vision and Optical Device Instruction: A Case Study

Jennifer K. Coy, M.Ed.

Children and young adults with low vision, age birth to 21 years, often receive care from two service delivery models: the medical model and the educational model. Medical care providers, such as optometrists and ophthalmologists, address students' eye health and help the student obtain the best visual acuity and peripheral fields through spectacle correction or lenses. Educational care providers, such as teachers of students with visual impairments (TVIs) and certified orientation and mobility specialists (COMS), address students' visual function and safe travel in school and community. When a student with vision impairment receives a clinical low vision evaluation, the medical and educational service delivery models collaborate in such a way that creates exceptional outcomes for students with low vision.

Research shows that students who receive clinical low vision evaluations, prescribed optical devices, and instruction in device use have positive effects in the areas of increased reading rates (words per minute) and comprehension scores, as well as increased expectations for visual functioning.[1, 2] Students' silent reading rates and comprehension scores have been proven to increase after optical device intervention. In addition, teachers of students with visual impairments, and students themselves, had higher expectations of what they thought the student could see after provision of optical devices and direct instruction on how to use those devices.

In one low vision project, end-of-year evaluations given to teachers,

parents and students cited the following outcomes due to optical device intervention: increased access to the common core curriculum, improvement in social skills, independent living, recreation, leisure and visual efficiency skills.[3]

In order for children to receive the utmost benefit from prescribed optical devices, they must be taught how to use their new tools; proficiency in their use is not intuitive. Take for example Ellena. Ellena and her family are participants in a mobile low vision program in Missouri that provides clinical low vision evaluations, prescribed optical devices and instruction in their use free of charge to school-age children. Recently Ellena received her first low vision evaluation and had her first experience with magnification. She had initial challenges using her reading glasses and handheld monocular telescope. Below is her low vision evaluation and two samples from her lesson plan sequence, which continues to be implemented by a certified low vision therapist.

CLINICAL LOW VISION REPORT

Student: Ellena
Date of Birth: March 1, 1999
Evaluation Date: November 4, 2010
Diagnosis: retinal colobomas; partial retinal detachments; anomalous head position secondary to exotropia and hypertropia
Best Corrected Distance Visual Acuity: OD: 10/300 (20/600) OS: 10/40 (20/80) OU: 10/40 (20/80)
Near Visual Acuity: 1.6M @ 12 inches; .8M @ 6 inches
Color Vision: within normal limits (D-15 testing)
Contrast Sensitivity Threshold: 10%
Peripheral Visual Fields: confrontation fields unreliable

SUMMARY

Ellena is 11 years old and attends sixth grade in a school district in rural Missouri. Ellena's parents

continued on next page

and TVI attended the low vision evaluation and provided information regarding her visual performance in the school setting.

Ellena does not currently wear eyeglasses or utilize low vision devices. Classroom modifications include preferential seating, large print and a reader (a classmate or adult who reads information for her) as needed; she is working on keyboarding by touch. Ellena reports that she is uncomfortable using anything that might draw attention to her in the classroom with her peers.

The goals for today's evaluation were to determine her visual potential and find low vision devices and solutions that may improve her visual function.

Unaided visual acuity at distance measured 10/300 with the right eye, 10/40 with the left eye, and 10/40 binocularly using a Feinbloom low vision chart at 10 feet. This is the Snellen equivalent of 20/600, 20/80 and 20/80 respectively. She read 1.6M sized numbers binocularly at a reasonable working distance.

A trial of various low vision devices was conducted and several recommendations were made.

RECOMMENDATIONS:

1. 4x dome magnifier
2. +4.00 reading glasses
3. 2.75x8 monocular spotting scope for in-class use
4. 6x16 monocular spotting scope for orientation and mobility purposes[4]

ELLENA'S LESSON PLAN SEQUENCE

Lesson 1

Optical Device Skills Addressed: Spotting, focusing, search patterns.

Individualized Education Goal: Ellena will use her prescribed optical devices to accomplish visual tasks throughout the school day.

Individualized Education Objective: Ellena will be able to name her low vision devices, describe their purpose, and demonstrate their use on four out of five occasions during the school day.

Materials Needed: Ellena's prescribed optical devices, educational team members, grade-level reading material.

Sequence of Events:

1. Review the low vision report with Ellena, her parents, TVI, certified orientation and mobility specialist, and regular education teachers.
2. Demonstrate the new tools and describe what each may be used for in various settings.
3. Upon completion of the education team meeting, have Ellena practice obtaining the best viewing distance with her reading glasses by placing reading material close to her nose and slowly backing material away until the image is mostly clear. Reinforce that the reading glasses are for short working distances by asking her to look beyond arm's length and describe what she sees.
4. Ask Ellena to read brief, grade-level passages using her new reading glasses.
5. To begin handheld monocular telescope instruction, describe the parts of the monocular: barrel, ocular lens, objective lens and lanyard. Talk about storage and care of the devices.
6. To spot information through the telescope, first use the unaided eye to locate the object, and then bring the pre-focused telescope to the left eye for viewing.
7. For focusing, explain to Ellena that an easy way to begin focusing a telescope is to close the barrel of the scope so that it is at its smallest length. Place the telescope over the left eye and slowly begin opening the barrel until the image becomes clear. Continue turning until the image starts to blur again, and then turn back to the clearest image.
8. Encourage Ellena to hold the monocular in her non-dominant left hand so that she may use her dominant right hand for turning the barrel of the telescope for focusing and, in the future, for copying information from the whiteboard.
9. Discuss with Ellena visual tasks that she has difficulty with during the school day. How might the magnifier, reading glasses and telescope become useful?

Evaluation: Record the number of times Ellena is able to locate an object and correctly focus with her telescope. Record Ellena's accuracy in reading material with her +4.00 readers.

Lesson 2

Optical Device Skills Addressed: Spotting, scanning, tracking.

Individualized Education Goal: Ellena will use her +4.00 reading glasses for scanning and tracking information at near.

Individualized Education Objective: Ellena will maintain her silent reading speed over a 20-minute time period through the use of her +4.00 readers.

Materials Needed: Ellena's +4.00 reading glasses and/or 4x dome magnifier, informal reading inventory (such as the Johns Informal Reading Inventory), and fiction book of high interest.

Sequence of Events:

1. Ellena has mentioned that she does not like reading aloud. However, her oral reading speed is faster than her silent reading speed (111 words per minute versus 94 words per minute). In addition, previous assessment of a 20-minute extended reading of regular print material indicated that her silent reading speed without optical devices began decreasing after just 10 minutes of reading (86 wpm during the first five minutes; 76 wpm during the second five minutes; 63 wpm for the third five minutes; and 68 wpm for the last five minutes).
2. Ellena should be asked to use her reading glasses for an extended silent reading period of 20 minutes. Material should be of her choosing so as to be of high interest. After five minutes of reading, tap Ellena on the shoulder to indicate for her to point to her place in the reading material (evaluator can make a pencil mark on the appropriate word). Continue this method for 20 minutes.
3. Determine words per minute read by dividing words read in each five-minute period by five.

Evaluation: Record Ellena's reading speed. Compare reading speeds with optical devices to reading speeds without. Which are better? Was Ellena able to maintain her reading speed during the second 10-minute session?

FUTURE CONSIDERATIONS

Ellena and her mother both confess that Ellena has very few skills in self-determination. Ellena does not recognize her own abilities and limitations as they relate to her vision impairment. She very rarely advocates for herself (i.e. lets the teacher know when she's unable to see the whiteboard). A lunch date has been scheduled with a college student with low vision who is a proficient optical device user and has excellent self-advocacy skills.

Ellena is apprehensive about using her optical devices in the classroom setting. However, she has a favorite teacher, Mrs. Adams, with whom she feels very comfortable. She has agreed to use the telescope during Mrs. Adams' class for obtaining the homework assignment from the whiteboard.

SUMMARY

When children with vision impairment receive clinical low vision evaluations, prescribed optical devices, and instruction in device use, they have the potential to make great gains in their ability to visually access information. With collaboration among the medical and educational service delivery models, and individualized lesson plan sequences that meet students' specific needs, children will receive the best low vision care possible.

is the Director of the *Comprehensive Low Vision Project* (CLVP), a nearly statewide low vision program founded by Lighthouse Industries for the Blind-St. Louis. She received her education from Peabody College of Vanderbilt University and is an ACVREP-certified low vision therapist, teacher of students with visual impairments, and certified orientation and mobility specialist.

Vision Rehabilitation for Children: Bridging the Gap between an Ocular Diagnosis and the Education Need

Presented at Envision Conference 2010 . . . . *Ana M. Pérez, OD, FAAO*

Some of the more common causes of permanent vision impairment seen in the pediatric population are retinopathy of prematurity, optic nerve hypoplasia and oculo-cutaneous albinism. All of these conditions typically leave very useful vision, which can provide the child with great functional independence. Through years of working with children with vision impairments, it has been clear that even with the best academically geared low vision evaluation and recommendations, if there is no direct communication with the team of professionals who work closely with the child in helping implement the recommendations, the outcome will be unchanged.

> "By having the tools and skills early in life, there is better opportunity for success."

Among the many goals for every doctor working with a child that has a vision impairment should be the development of visual independence and self-confidence.[1] These children must have as much access to all aspects of education as their more visual peers:

- Start teaching the use of optical devices at an early age.
  - ❖ Have students learn effective skills that translate to efficiency in a classroom setting.
- Make the visual information important or relevant to their life now.
  - ❖ Seeing a bird in a nest
  - ❖ Recognizing a friend at a distance
  - ❖ Reading the menu board at a restaurant
- Wean students off modifications that create dependency, such as providing large print or taking notes.

THE LOW VISION DOCTOR

Every doctor begins his or her evaluation with a case history. In the case of determining educational recommendations for a young patient with vision impairment, the questioning must be related to their classroom setting, grade level, academic achievements and/or delays. Understanding the visual demands for each specific grade level should include distance visual needs, near-reading needs, copying/note-taking skills, computer access and other demands like navigating the hallways or recognizing the correct school bus number and/or car in the parking lot.

Retinoscopy/Refraction:

Typically, loose lens refraction is the most efficient way of reaching the final spectacle prescription. A discussion regarding prescribing or not for a child who is visually impaired should depend not only on whether the glasses make a distance acuity improvement, but also the impact the glasses will have during near-reading tasks at school and during homework. In the case of myopes, my rule of thumb is to prescribe only when the glasses provide an improvement in visual acuity. In the case of hyperopes, it is important to consider the impact the hyperopic correction will have when the patient is performing reading/writing tasks and prescribe based on that knowledge.

Distance Needs:

Seating arrangements are very different for a kindergartener versus a high school student. In the lower grade levels, students may work in stations, while in the higher grades their seats are arranged in rows facing one direction. Each class subject may have different visual demands as well. Inquiry into the specifics is crucial.

- Consider two different telescope (TS) powers: A lower power could be used in classroom settings. In a smaller classroom, the visual demand based on the seating arrangement will require less magnification, benefiting from the larger field of view. A higher telescope power would be best for outdoor settings such as school rallies, field trips, reading the bus numbers, etc. At the very least, the visual acuity through the TS should improve to 20/40 equivalent.
- Consider the importance of having access to visual information while a teacher is actively explaining the step-by-step process for solving a math problem, or the benefits of following the explanation of the lifecycle of a frog.

Near Needs:

It is important to understand the visual demands found in the textbooks for each grade level. Teachers of students with visual impairments can certainly be of great assistance in providing samples of the print. By creating your chart of expected print size per grade level, you are able to determine a visual demand as it relates to the child's reading demands. It is imperative to make a decision regarding the use of spectacle correction. At the time, glasses may not make a significant improvement at a distance, but it may affect their accommodative system based on the print size and the working distance the child prefers. You must take into consideration all of the following:

- **Refractive error:** May or may not improve distance vision; the discussion must be made regarding the use of spectacle correction.

- **Accommodative reserve:** Consider the accommodative demand based on the child's working distance and evaluating the accommodative system by different means including, for example, Monocular Estimation Method (MEM) retinoscopy. You can also take into consideration the Duane Hoffstetter formula 15-(age/4) for accommodation based on age. This should only be used as a guideline.[2]
- **Acuity reserve:** Do not allow the student to read at their threshold. A reading reserve will allow the student to place more attention on the concept being read rather than placing all the attention on figuring out what is being read. Consider reserves between 2.5x- 7x larger than threshold print.[3]

Writing Needs:

- Visual demand for handwriting is larger than for printed text material.
- Dark lead pencils
- Keyboarding skills

Visual fields are typically tested with both eyes open to get a better idea of the child's functional perception of his/her surroundings, understanding that this field test is not a diagnostic tool to determine or monitor a disease process. Depending on the level of maturity, several forms of testing fields can be done—from a gross manual perimetry to an automated binocular Estermann found on the Humphrey programs.

THE TEAM

The low vision team should include the TVI/CLVT, O&M, OD and any other allied professional working directly the student.

1. Know at what point to begin incorporating optical devices for both classroom use and outside the educational environment.
2. Recognize that without a team approach, which incorporates

continued on next page

training and the application of the skills into the student's environment, management is incomplete.

As with any new device, recognize that there is a learning curve when it comes to dealing with low vision optical devices.[4] It is not about prescribing an optical device; it is about helping the child learn how to effectively and efficiently use the device. Low vision therapists (CLVT), or the teacher of students with visual impairments (TVI), can implement training skills for the child, and can help parents learn how to motivate/encourage the child to use their devices outside of the school environment.

"It is not about ... the device."

Having a comfortable, supporting relationship with all the professionals involved with the child at school is necessary. Being able to openly discuss issues that are impeding the progress in the patient's visual learning skills is crucial. Many times, the recommended optical devices are not successful—not for a lack of training, but because the academic environment does not allow them to be successful, nor does it provide the opportunity for incorporating the device. This is why the professionals that are present in the school environment bring to the clinic a helpful perspective.

Ultimately, the goal is independence. As visually impaired children grow into adults, they will need to compete with their more visual peers. By having the tools and skills early in life, there is better opportunity for success.

Optometrists can play a role early in these individuals' lives by starting management and introducing devices early; tailoring the prescription to the specific visual demands for that particular child's distance and accommodative needs including acuity reserve; and enlisting the help of a TVI or CLVT and O&M.

SUMMARY

A. Correlate the child's visual function with visual demand in the educational system before considering magnification.
B. Optical devices can start early even if, at the time, they are not appropriate for the classroom setting.
C. Children with vision impairments need to develop the necessary skills and receive the proper tools to ensure continued independence and success through educational and vocational years.
D. Unless a child with vision impairment is exposed to the visual information that he is missing, he will not recognize the importance of incorporating optical systems for independence.

holds a position at Michael E. DeBakey VA Hospital VISOR Program, working with veterans who are visually impaired in a rehabilitative setting. She also provides services at the University of Houston Center for Sight Enhancement, serving pediatric low vision patients as an adjunct faculty. Dr. Pérez finds great satisfaction working with the educational system to help prepare children with visual impairments in obtaining the tools and skills necessary to become successful in their education and future vocational goals.

The Envision Driver Assessment Program is underway. The program will provide low vision driving assessments for those who need them to qualify for, or renew, a Kansas State Driver's License. Currently, the Envision Driver Assessment Program is the only bioptic training and low vision driving assessment program in the state of Kansas. To date, there are 12 clients enrolled in the program.

Although many researchers stress the importance of training low vision drivers to effectively use a bioptic telescope, the availability of such training programs is limited. Current driving regulations place the responsibility on clinicians to make a medical judgment on the abilities of patients with vision impairments to drive safely.

Kansas vision driving regulations are 20/40 visual acuity in the better eye, with or without corrective lenses, or 20/60 in the better eye, with doctor's report. Drivers with less than 20/60 visual acuity must demonstrate the ability to operate a vehicle safely, have a safe driving record for three years, and have no restrictions in their visual field.

To continually improve the quality of service and treatment provided by the Envision Vision Rehabilitation Center (EVRC), EVRC and research staff are in the process of revising the patient satisfaction survey. This survey provides the opportunity for patients to offer essential feedback to the clinic on critical topics including patient/therapist communication, goal setting, effectiveness of rehabilitation and follow-up care. Staff will utilize this information to identify methods of improving the quality of care.

On February 26 and 27, Envision Vision Rehabilitation Center (EVRC) and research staff attended a two-day seminar, Neuro-Optometric Rehabilitation, hosted by Western University. During the seminar, Dr. William Padula and Raquel Munitz, MS, COVT, explained the connection and relationships between the visual processing system and the sensorimotor and vestibular systems, as well as the difficulties brain injury produces in these systems, such as post-trauma vision syndrome (PTVS) and visual midline shift syndrome (VMSS). Discussion also included practices and tools for treatment of visual issues related to neurological conditions, such as traumatic brain injury (TBI), cerebro-vascular event (CVA)/stroke, Parkinson's disease, Alzheimer's, multiple sclerosis and autism. Attendance and training of the EVRC staff will allow for the expansion of effective treatment options for EVRC patients who have vision impairments related to neurological damage. In addition, the new knowledge opens a wealth of opportunities for research in this important area.

Envision Conference 2011

"Excellence in Research" Keynote Announced

Envision Conference is pleased to announce Gary S. Rubin, PhD, as the 2011 *"Excellence in Research"* keynote speaker.

Professor Rubin is a Gold Fellow of the Association for Research in Vision and Ophthalmology and an Honorary Fellow of the College of Optometrists in the UK. In addition to publishing more than 100 scientific papers and book chapters, some of his noted research includes reading and face recognition in people with impaired vision, a study sponsored by the National Eye Institute. He has also researched the effect of vision impairment on older people's daily lives, a study sponsored by the National Institute on Aging. Rubin has devoted considerable time to the development and validation of new clinical vision tests used in a wide range of eye diseases including cataracts, macular degeneration and diseases of the optic nerve.

Rubin received his PhD in experimental psychology in 1983 from the University of Minnesota. After completing a postdoctoral fellowship in low vision in 1985, he joined the faculty of the Wilmer Eye Institute at Johns Hopkins University School of Medicine as Director of Low Vision Research. In 1999, Rubin was appointed as the Helen Keller Professor of Visual Rehabilitation at the Institute of Ophthalmology in London. In addition to serving as this year's keynote speaker, Rubin will also moderate a vision research symposium.

"I always enjoy the Envision Conference. Seeing colleagues present new data for the first time emphasizes how influential the Envision Conference research sessions are."

– Michael Crossland, PhD, London, UK

Continuing Education

Envision Conference offers 120 hours of clinical medical education, vision rehabilitation and vision research sessions from which to choose. Accrediting agencies include ACCME, COPE, AOTA, ACVREP and CRCC.

Continuing Education Certificates for Envision Conference 2011 will be available for download directly from the conference website by October 24, 2011. Save your badge or registration number to access your certificate(s). You may also download and print your certificates from all past conferences at our CEU Certificate page. Optometrists may also access this information through the Association of Regulatory Boards of Optometry (ARBO) website at www.arbo.org by following the OE Tracker instructions.

"There is no greater resource for beginning a new or enhancing your current low vision practice. Working with all components of care involving a visually impaired patient—orientation and mobility, vision therapy, optometry, ophthalmology, etc.—is invaluable."

–Envision Conference 2010 Attendee

Register Early!

Registration is open and easy to complete online at the Envision Conference website, **www.envisonconference.org**. Attendees can register by July 8, 2011 to receive the early bird rate of $475. Registration received after July 8, 2011 will be $575.

Exhibitors will receive the advance rate of $850 per booth if paid by July 15, 2011. Registration for exhibitors will be $950 after July 15, 2011. Several sponsorship and advertising opportunities are still available. Check the conference website Sponsorship Information page, or contact the Envision Conference Exhibit Manager, Shelly Chinberg, at (316) 440-1526 or via email at **shelly.chinberg@envisionus.com**.

Make Envision Conference and Historic St. Louis Your Destination This September

There are many St. Louis attractions for Envision Conference attendees to discover—just a short distance from Hilton St. Louis at the Ballpark.

The Gateway Arch

The most recognizable landmark in St. Louis is The Gateway Arch. It is America's tallest man-made monument. Noted as "The Gateway to the West," it is a tribute to the opening of the American West. Combine a tram ride to the top with a paddlewheel riverboat cruise and a bike rental on the Riverfront Trail—all within steps of Envision Conference 2011. For more information, visit **www.gatewayarch.com**.

Core of Discovery

The Core of Discovery is a downtown St. Louis attractions district that offers a wealth of fun activities to explore, experience and discover. Visit the website at **www.coreofdiscovery.com**.

Important Dates

- **July 8, 2011** – Deadline for Early Bird Registration
- **July 15, 2011** – Deadline for Advance Price Exhibitor Registration
- **September 21-24, 2011** – Envision Conference 2011 at the Hilton St. Louis at the Ballpark, St. Louis, MO

Please contact **Michael Epp**, Director, Professional Education, with questions about the Envision Conference at **(316) 440-1515** or via email at **michael.epp@envisionus.com**.

Sponsorship Opportunities for Envision Conference 2011

Envision is seeking sponsorship of the sixth annual comprehensive multi-disciplinary conference for and about low vision rehabilitation. Expose your brand, services and products to hundreds of low vision professionals. There are two levels of sponsorship available: Sponsorship of the overall Envision Conference or sponsorship of a specific event.

Conference Sponsorship

Platinum Sponsor - $20,000

This exclusive sponsorship includes:

- Full page color ad on front inside cover of program
- Company logo prominently displayed at events
- Company logo, web link and sponsor information prominently displayed on the Envision Conference website
- Additional signage in exhibit hall
- Representation in registration materials
- Special recognition during the opening night welcome reception
- Allocation of two prominent exhibit spaces in exhibit hall
- Two-page advertorial in *Visibility*

Gold Sponsor - $15,000

This non-exclusive sponsorship includes:

- Full page black and white ad in conference program
- Company logo, web link and sponsor information prominently displayed on the Envision Conference website
- Additional signage in exhibit hall
- Representation in registration materials
- Name recognition during welcome reception
- Allocation of one exhibit space in exhibit hall
- One-page advertorial in *Visibility*

Silver Sponsor - $10,000

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- Half page black and white ad in conference program
- Company logo, web link and sponsor information prominently displayed on the Envision Conference website
- Additional signage in exhibit hall
- Complimentary “take one” at registration table
- Name recognition during the opening night welcome reception
- Allocation of one exhibit space in exhibit hall
- One-page advertorial in *Visibility*

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Buffet Lunch - $5,000

Continental Breakfast - $2,000

Internet Café - $2,000

For complete sponsorship benefits and to apply, visit ***www.envisionconference.org*** *or contact Shelly Chinberg, Envision Conference Exhibit Manager, at* ***(316) 440-1526*** *or* ***shelly.chinberg@envisionus.com***.

Envision Professional Education Calendar

June 3, 2011

Vision Rehabilitation for Low Vision and Visually Impaired Patients *and* Vision Rehabilitation of Patients Affected by a Neurological Etiology. Wichita, KS. *CE – AOTA, KOTA, ACVREP, CRCC*

Low Vision Grand Rounds - Early Ophthalmic Intervention and Pediatric Vision Rehabilitation. Wichita, KS. *CE – ACCME, AOTA, COPE*

Sept. 21-24, 2011

Envision Conference 2011, St. Louis, MO.

CE - ACCME, ACVREP, AOTA, COPE, CRCC

October 6, 2011

Low Vision Grand Rounds - Vision Rehabilitation for Neurological Vision Loss. Wichita, KS. *CE – ACCME, AOTA, COPE*

For more information, visit the Education and Resources page at www.envisionus.com.