

Recommendations for the new EYE Center for Children’s Vision, Learning & Technology at the University of Washington Bothell

Background: In the United States, two-thirds of all 4th and 8th graders read at or below a basic level (National Assessment of Educational Progress trend data, 2002 to present). Most of youth who drop out of school, or end up incarcerated, too frequently have undiagnosed vision issues that should have been addressed years before. Congress’s *No Child Left Behind* initiative was intended to improve student reading ability, but \$7 billion in federal investment to improve reading ability produced no improvement for students (Abt & Associates 2009 & Abt & Associates 2012). Since the mid-1800s educational institutions and the field of medicine have ignored children’s near-vision issues. Vision screening efforts have focused primarily on 20/20 distance vision acuity alone.

Problem Statement:

Insufficient reading ability for millions of students makes it time for the education community, the medical community and eye care professionals to pay attention to near-vision and two eye coordination as a significant barrier to higher level literacy. This includes convergence insufficiency, understood as the inability of the eyes to maintain clear single two eye coordination in sustained near point vision tasks. Lack of near-vision screening poses significant issues of social justice for young people. Parents with financial resources are far more likely to learn about and then get the treatment their youth need to address underlying vision issues; whereas children of families without financial resources may have near vision issues that go undetected through their entire school career. Because near-vision is not routinely screened at school, in doctor’s offices, or even in vision centers, low-income youth are disproportionately—and unfairly—affected.

Vision-Specific Issues:

It appears the medical community has yet to embrace the issue of convergence insufficiency. Issues include the reluctance to accept convergence insufficiency as a real public health problem. Some in this professional group have not accepted

current research as viable and scientifically based. The result is a denial of the existence of convergence insufficiency and eye coordination issues for our children and the acceptance of current vision screening as adequate.

Mary Pellicer, M.D., is very sure that if these topics had been taught in medical school (she is a graduate of UW School of Medicine), this would not have turned into the "systemic problem" it has now become. Professor of Law and former Dean of Berkeley Law Christopher Edley is familiar with the Harvard Conference on Vision and Literacy in 2001 and has been concerned about the link between poor student achievement and undiagnosed and untreated vision problems for "more than two decades." Edley was co-chair of the national Commission on Education Equality and Excellence and stated in 2014 that "From an education policy perspective, I believe this is second only to hunger as the most important poverty related problem we can actually do something about. Now."

Symptoms of convergence insufficiency have been documented to manifest in extreme ways. Headaches, fatigue, nausea, difficulties in school, behavior issues (including avoiding school work because it is uncomfortable) and more have been documented. In a paper by David b. Granet, MD, FACS and others at Ratner Children's Eye Center, Department of Ophthalmology, University of San Diego, La Jolla, CA, experts discussed the difficulty in distinguishing convergence insufficiency from behavior issues such as Attention Deficit/Hyperactivity Disorder or "ADHD." When near-vision activities produce physical discomfort, pain and other issues, children and teens may resist and/or act out to avoid the cause of their discomfort. Avoidance behavior *has* been misidentified as ADHD. For the protection of patients, doctors and parents deserve to know whether a vision problem may be present before endorsing ADHD drugs for their children.

From Granet et al.: "For the diagnosis [of ADHD], a complete medical evaluation should be performed and vision or hearing deficits should be ruled out....[c]omparing the Convergence Insufficiency Symptom Survey (Scheiman et al 2005) with the DSM-IV criteria for ADHD, we noted that 5 of the 9 symptoms of inattention could also be applied for CI (symptoms 1,2,4,6 and 8) (American

Psychiatric Association, 2000)...Since the symptoms can be similar, it is not hard to imagine a diagnostic confusion."

Recommendations for EYE Center for Children’s Vision, Learning &Technology:

To provide maximum benefit, the Center should focus on the following:

Completing the development of new technology to expedite and improve the testing and treatment for convergence issues. Issues with convergence, tracking and accommodation can all be detected with technology. Without a doubt, diagnostic programs can be created that are many times more accurate than the naked eye, or even the best questionnaires, in detecting eye movement problems that can cause problems. It is important to note that children and adults are seldom good at describing problems being caused by the eyes because (1) they are rarely asked and (2) discomfort is normal for them—they do not know what healthy vision “feels” or “looks” like. Parents are seldom if ever provided with information on the kinds of early childhood experiences appropriate for the healthy development of the visual system.

- 1) Not every near-vision problem is an eyeglass issue. Parents and young patients need information on what to do when new glasses don't feel good and what to request if symptoms persist. The Center should develop information materials to help educate parents about convergence insufficiency, a very different kind of problem, so they can request screening by name. It is common that eye doctors think only in terms of whether eyeglasses are needed or not, and if they are not then there isn't a problem. **A comprehensive diagnostic program would likely be able to distinguish the difference between the simple need for eyeglasses and issues like convergence insufficiency.**

- 2) Parents need to have better information when they are told their child has an eye turn (strabismus) or lazy eye (amblyopia) but will grow out of it. Early intervention is best, or when that is not appropriate the problem should be closely watched with new technology and/or protocols to check on whether the child is, in fact, growing out of it. Also, eyes do not have to

be visibly misaligned to cause problems with vision. Think of it this way: Each eye is an independent sensory tool. If each eye does not point as it should so that a single image results, children may experience double vision. As they struggle to force the eyes to work together, they experience visual distortions, muscle strain, fatigue and/or pain.

- 3) Photophobia (negative reaction to light) may be one symptom of eyes that are not working well together. There is considerable attention to depth-perception problems (not being able to see three-dimensionally), but little attention is directed to light sensitivity. **The Center should study the impact on the visual system of daylight and/or unstable light sources** (e.g., fluorescent lighting which is constantly in a state of flickering and which varies widely in color and volume).

- 4) A growing body of scientific evidence suggests vision issues frequently emerge after head injuries. **The Center should develop protocols and materials to ensure injured children are screened for residual vision problems.** It does not take a major concussion to upset the visual system and children often have injuries that are never reported. In our last trip to Pacific University College of Optometry we learned that Dr. Hannu Laukkanen spent four months in 2012 with the Veteran's Administration's Walter Reed National Medical Center studying head injuries and has new information on head injuries in children, athletes and veterans. He will be a great resource for the Center on these issues. He has provided us with a 2016 Journal of Trauma Nursing article on underreported head concussions and concussion-like symptoms among female high school athletes.

- 5) Optometrists recognize convergence insufficiency as a problem with the vision system's eye muscles and recommend vision therapy to treat convergence insufficiency, instead of surgery. Frequently, parents are not aware that the two fields, optometry and ophthalmology, recommend significantly different treatments. **The Center should develop information**

materials to help parents understand the treatment options. Vision therapy is a valid option for misaligned eyes. Also, where surgery is performed, the surgery may improve muscle tone, but it cannot retrain the brain to cause the eyes to work more appropriately as a team. Therapy provides that retraining. Alderwood Vision Clinic's Nancy Torgerson, OD, and Thomas Lenart, MD, provide training on how ophthalmologists and optometrists can work together to provide maximum benefit to their patients.

- 6) Pediatricians need and deserve a new tool to provide efficient and effective near-vision screening. **The Center should take on the challenge of developing a screening tool that checks for eye coordination problems,** in addition to other vision issues that MDs now consider important.
- 7) In addition to these vision-centric issues, the Center should study a highly structured reading improvement strategy to see if—coincidentally—it simultaneously improves coordination of the eyes. **The Center should study the Read Right system to see if it in fact promotes improved eye movement and easier reading.** Our contact in this state for this work is Rhonda Stone, Executive Director of the Literacy Alliance/ Lee Gilles Foundation for Literacy, a long-time advocate for both vision issues and improved instructional methodology.
- 8) **The Center should take the lead in developing computer screening tools that can be used to detect the vision problems of our high risk children and youth:** Dr. Willard Bleything of Pacific University College of Optometry has worked with drop out students in Oregon and with the development of the Convergence Insufficiency Symptom Survey, and terms adequate vision care (including testing and treatment for eye coordination problems) a "quality of life" issue.

A New Jersey study from 2006 estimated the cost savings of providing special education students good vision care at \$200 million per year, yet the medical and education communities advised the legislature not to fund the pilot program. Maureen Powers, PhD, has estimated the cost saving of providing vision therapy to half of the special education students in LA schools (those with the relatively uncomplicated cases) at \$49.5 million per year. She has been unable to get legislation passed in California that would allow these students to be tested for eye coordination problems.

The AmeriCorps Child Vision Project in the Toppenish, WA, Children's Administration office in 2010-12 found numbers of foster children with unmet vision needs (58% of those screened) and identified abused/neglected children, including those who had been exposed to drugs, whose mother's had difficult pregnancy and/ or delivery/ or multiple births or who had a family history of poor vision, as being particularly at high risk for having vision issues. Foster children with eye coordination problems and stable foster homes were able to benefit from vision therapy.

Seattle optometrist Dr. E. Larry Jones conducted a three year study of approximately 300 King County incarcerated children and youth from ages 12 to 18 and found 80% with vision needs not necessarily identified by the Snellen Chart, with the majority just needing glasses.

- 9) **It is very important that the Center work on a screening tool for kindergarten children.** Floyd Mizener, OD, and Janet Hughes were major contributors to the success of Illinois in passing SB 805 in 2003 which requires a disclaimer to parents before children can receive a school screening. The law is commonly referred to as the Kindergarten Vision Law and requires parents to be given the choice of an eye exam by an eye doctor in place of vision screening before a child enters school and every year after. We also need early attention to our children's vision needs and cannot continue to wait until our students are in the third and fourth grade

to consider whether or not a vision issue is contributing to their reading difficulty. We have seen too many children whose vision issues could have been detected years earlier and who could have avoided problems in school and/or later life.

Summary:

A Center for Vision, Learning and Technology is critical if we are to address the vision needs of our population. The narrow medical model/question, “is the eye healthy?”, is inadequate to assure that children and youth are able to read comfortably and with good comprehension. The appropriate and accepted standard is what constitutes a "well child." **A Center will develop a clear and verifiable definition for convergence insufficiency and then develop reliable data for just how common this particular problem is.** Other eye coordination issues can also be identified and quantified. The effectiveness of computer treatment programs and other vision therapy will be studied until there is agreement on what procedures are most helpful. The work of an independent Center, not affiliated with an optometry school, will provide needed credibility to this work.

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