January 2017- Children's Vision Talking Points

Is there an unmet need for children's vision care?

A 2016 National Academies of Science, Engineering and Medicine (NASEM) report, Making Eye Health a Population Health Imperative: Vision for Tomorrow states; "The problem is that many children today do not receive the full complement of resources they need to overcome vision-related disability." The report emphasizes "that we should make quality clinical eye care and support services available to everyone." According, the report argues that "this will take shifts in paradigms and ways of thinking."

National Health Interview Survey (NHIS) data show only 7 percent of children have had an eye examination in the 12 months preceding the start of first grade. This is especially troubling because the most recent National Eye Institute (NEI) prevalence study reveals 20.9 percent of preschoolers have significant hyperopia (farsightedness), 10.1 percent have significant astigmatism (irregular curvature of the eye), 3.8 percent have significant myopia (nearsightedness), and 2.4 percent have significant strabismus (eye turn), as assessed through an eye examination.

Can traditional vision screening meet the detection requirements necessary to address children's vision care needs?

NO. The recent NEI prevalence study found that when using "visual acuity" as the sole criterion, only 5.6 percent of all preschool children could be identified as warranting any concern. This finding is consistent with the fact that "visual acuity," the most common methodology used in vision screening for more than 150 years, predominantly assesses myopia only. Used for vision screening, "visual acuity" is a very low sensitivity methodology (27-37% percent sensitivity) that produces high rates of false negatives* and fails to identify most individuals with vision disorders.

Does traditional vision screening detect amblyopia?

Predominantly it does not. The most commonly used screening methodologies do not determine refractive error and, therefore, do not detect amblyopia (lazy eye). The Vision in Preschoolers Study[iv] (NEI/VIP) showed detection of children with amblyopia was found to be most accurate with tests of "refractive error." Of the 11 screening tests evaluated in the VIP study, only three tests were of this "refractive error" design. These "refractive error" tests incorporated autorefraction instrumentation into the screening methodology. This instrumentation is not typically used in vision screenings performed within schools or pediatricians' offices. In fact, when the single best "visual acuity" screening test was evaluated in the VIP Study (i.e., VIP crowded, single Lea Symbols® VA test), its positive predictive value was found to be just 50 percent based on NEI prevalence figures. It's sensitivity just 37%.

Does traditional vision screening detect myopia?

YES. Vision screening primarily detects significant myopia (nearsightedness) and as such will detect most all of the 3.8 percent of children with significant myopia. Nearsighted children do

not have trouble reading, perform well in school, move closer to the board as myopia progresses and eventually self-report for eye examinations when the teacher can no longer place the child close enough to the board. Screening for myopia or nearsightedness is thus not particularly necessary.

Does traditional vision screening detect hyperopia?

NO. Vision screening will miss most of the 20.9 percent of children who have significant hyperopia (farsightedness). These children can see an eye chart at distance but will have difficulty maintaining focus at near distance and will suffer from a low comprehension of reading material as a result. As they are unable to perform or pay attention to near distance task assignments, these children will often act out in ways that may misidentify them as having behavior or learning problems.

Does traditional vision screening detect astigmatism?

NO. Astigmatism blurs and distorts both distance and near vision. High levels of astigmatism may interfere enough with distance vision to warrant some pickup from typical vision screening. However, the vast majority of the 10.1 percent of children with significant astigmatism will still be missed by typical vision screening.

Does traditional vision screening detect strabismus?

NO. Most significant strabismus will escape detection by typical vision screening; therefore, a majority of the 2.4 percent of children with significant strabismus will still be missed by vision screening.

Are refractive errors important to correct early in life?

Of note is the NEI prevalence study that found the risk of developing amblyopia increases even with mild refractive errors. If children receive vision screening and not a comprehensive eye examination, many preschool children with significant refractive errors, including hyperopia (farsightedness) and astigmatism, will continue to suffer increased risk of visual impairment. Children with any of these disorders should be examined by an optometrist or an ophthalmologist who can initiate appropriate treatment and ensure refractive error alone is not the sole disorder affecting vision. Amblyopia is a condition affecting 3 to 5 percent of children in the United States. Amblyopia involves lowered visual acuity (clarity) and/or poor muscle control in one eye. Additionally, children with amblyopia do not experience stereopsis and need diagnosis and treatment as early as possible to prevent long-term visual impairment.

Are there ongoing health disparities in access to vision care?

Children whose parents lacked health insurance and access to vision care were almost three times more likely to have amblyopia than those whose parents had health insurance.[v] The 2009 National Health Care Disparities Report acknowledged 1) socio-economic status below 400 percent of the Federal Poverty Level and 2) lack of insurance coverage as reasons for lack of effectiveness in "vision care" among children ages 3 to 6 when assessed (those who ever had their vision checked).[vi] Furthermore, only 7 percent of children beginning first-grade have received an eye examination, as reported by a parent or caregiver when surveyed. If children

are not assessed through eye examination, greater levels of disease disparity will result. Lack of health insurance and diminished access to vision care was found to increase the risk of vision problems. Fortunately, the pediatric essential health benefits of the ACA include the benefit of eye examination by an eye doctor and glasses, annually from birth through age 19.

Is there any link between uncorrected vision challenges, juvenile delinquency and special education?

Many juvenile offenders have significant undiagnosed and untreated vision conditions. These untreated vision conditions are considered major contributive factors to their inability to perform and conform to the demands of school, employment, and society. With an estimated 75 to 90 percent of all classroom learning coming to the students via visual pathways, nearly all tasks a child is asked to perform in the classroom depend on good visual skills.[ix] Interference with these essential vision pathways result in the student experiencing difficulty with learning tasks. The most recent report issued by the National Center on Adult Literacy (NCAL) describe our nation's literacy levels at well below the standards we've set and a prison population full of individuals who are illiterate or not reading even at functional levels. The NCAL report on prison literacy indicates 75 to 90 percent of juvenile offenders have learning disabilities; up to 50 percent of adult inmates are functionally illiterate; and up to 90 percent of adult inmates are school dropouts.

Importantly, undiagnosed and untreated vision-related learning problems have been reported to be significant contributors to early reading difficulties and ultimately to special education classification. Interestingly, juvenile corrections surveys indicate more than half (53 percent) of incarcerated juveniles reported they have had an Individualized Education Plan requiring special education services. These rates are at least twice those of youth in schools outside the criminal justice system.

How are mandatory preschool eye examination laws working?

In 2000, the Kentucky preschool exam law (H.B. 706) was enacted to address high rates of vision problems severely limiting young Kentuckians' ability to learn and succeed in school. The law was aimed at ensuring all children entering the school system were visually prepared to learn and was primarily focused on reducing and eventually eliminating amblyopia across the Commonwealth of Kentucky.

The law requires school officials to secure evidence that a comprehensive eye exam has been performed by an optometrist or ophthalmologist prior to Jan. 1 of the first year a child turning 3, 4, or 5 years old is enrolled in a public school or Head Start program.

Analysis of the first seven years of data from Kentucky reveals 13 percent of children were identified as needing corrective lenses; 3.4 percent were diagnosed with amblyopia; and 2.3 percent were diagnosed with strabismus. Additionally, the law's impact was analyzed against the results from the Commonwealth Accountability Testing System (CATS). These data show the number of Kentucky children proficient or distinguished in core scholastic success measures showed significant improvement only a few years after the preschool exam law was implemented. Children proficient or distinguished in reading rose from 57 percent in 2000 to 68

percent in 2005. Additionally, Kentucky students proficient or distinguished in science rose from 36 percent in 2000 to 55 percent in 2005. And those students proficient or distinguished in writing rose from 23 percent in 2000 to 53 percent in 2005.

References:

2016 National Academies of Science, Engineering and Medicine (NASEM) report, Making Eye Health a Population Health Imperative: Vision for Tomorrow
http://www.nationalacademies.org/hmd/Reports/2016/making-eye-health-a-population-health-imperative-vision-for-tomorrow.aspx

2002 National Health Interview Survey as cited in CDC MMWR, 54(17), 425-9

National Institutes of Health The Multi-Ethnic Pediatric Eye Disease and Baltimore Pediatric Eye Disease Studies (NEI.2011)

www.visionandhealth.org/documents/Child_Vision_Report.pdf

http://www.nei.nih.gov/neitrials/static/study85.asp

National Institutes of Health The Multi-Ethnic Pediatric Eye Disease and Baltimore Pediatric Eye Disease Studies (NEI.2011)

Medical Expenditure Panel Survey, 2006

2002 National Health Interview Survey as cited in CDC MMWR, 54(17), 425-9

Harris, Paul O.D.; The Prevalence of Visual Conditions In a Population of Juvenile Delinquents, Curriculum II, Vol. 61, Number 4, Jan 1989

U.S. Department of Education; ERIC Clearinghouse on Handicapped and Gifted Children.

Learning Related Visual Problems, ERIC Publication, n.d

New Jersey Commission, 2006

Youth in Minnesota Correctional Facilities; 2007 Student Survey