

What All Pediatricians Should Know: InfantSEE—A National Resource for Early Vision Assessment in Infants

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Visual health and an intact visual system are essential to normal development. Many of the early markers for cognitive, social emotional, and communication development directly measure visual milestones: eye contact, tracking, object permanence, reciprocal smile, visual attention, and exploration. Therefore, it is of paramount importance to understand the visual status of patients as part of a comprehensive medical and developmental evaluation. We know that developmental disorders are very common. Recent data from the Centers for Disease Control and Prevention found that about 1 in 6 children in the United States had a developmental disorder in 2006–2008.¹ Hearing loss was considered such an important cause of developmental and language delays that now all newborns have to undergo a newborn hearing screen before discharge from the hospital just as they all have a metabolic screen. As pediatricians we need to also understand that visual ability is an essential component of motor, cognitive, language, and social development and be vigilant in our visual assessments and make use of expertise available within the community.

The American Academy of Pediatrics recommends the following for visual assessments in newborns²: to assess a red reflex at birth and examine for congenital deformities of the eyes. An assessment of fixing and tracking is recommended during infancy and an eye exam for red reflex until the age of 3 years when most typically developing children can participate in a standard eye exam. However, those with language deficits or other developmental delays may not be able to participate in this kind of test at age 3 years. There is no recommendation or a standardized protocol for measuring visual acuity in infants or children younger than 3 years in a pediatric office, although it is known that young children can have significant refractive errors very early in life. Therefore, infants may have undiagnosed visual problems, which can lead to amblyopia and well as hindering normal development if the refractive error is significant enough. Pediatricians are the gatekeepers of infant care and development and should be aware and informed about services that will help their patients.

The American Optometric Association Foundation and the Vision Care Institute have partnered to create

InfantSEE, a no-cost public health program, which provides professional eye care for infants between the age of 6 and 12 months nationwide. This program has been in existence since 2005, is available throughout the country, and provides free comprehensive vision assessments by members of the American Optometric Association to any infant between the ages of 6 and 12 months. This program has been recognized by the federal government and in 2010, President Obama signed into law a bill, the “Consolidated Appropriations Act of 2009,” that included \$590 000 in new direct appropriations for the InfantSEE program.

I learned about the program through a symposium I was invited to attend at the SUNY College of Optometry, I also learned that the American Optometric Association were looking for new ways to expand the program and educate physicians, and pediatricians in particular, about the benefits of this program for their patients.

In reaching out to general pediatricians in my area, as well as the pediatric department at my Academic Medical Center, I found that no one had heard of this program. It seemed that many of the gatekeepers of infant care, the general pediatricians, were unaware of the great benefit this could have for all our patients. With an incidence of amblyopia at approximately 3% of the population we are missing many vision problems until it is too late to fully correct the visual loss.³ The InfantSEE program has received media attention and publications in optometry journals but none in the pediatric literature.

The data below shows how important the InfantSEE program has been since its inception and it falls on all of us in pediatrics and in primary care to be aware of the importance of good visual acuity on infant development and encourage our patients to get evaluated. Just as there was a push to include newborn hearing screening as early as possible to identify children with hearing

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problems we should advocate for early vision assessments as well.

More than 100 000 infants have received a comprehensive eye health and vision assessment under the InfantSEE program. A total of 8000 optometrists throughout the United States are participating providers for this public health program. Data collected from the program showed that 1 in 10 infants had an undetected vision problem, ranging from excessive farsightedness to retinoblastoma. Additionally, minority and premature babies showed a significantly higher incidence of risk factors for vision problems, including high refractive errors, strabismus, and eye pathology making them high-risk groups for the long-term effects of visual impairment. The optometrist can objectively test visual acuity in infants by using a method called *forced choice preferential viewing*, where the infant is presented handheld tools with stripes of decreasing size until the infant no longer responds. Subjective refraction is not possible with infants; therefore objective assessment of refraction with a retinoscope is used. The Hirschberg test of ocular alignment provides a simple assessment of whether both eyes are pointing toward a target, and large 3-dimensional targets are used to test binocular function at higher levels.

The data from the SUNY school of Optometry⁴ showed that for the infants they saw in their first 2 years of the program, 70% of the parents had a concern and 30% had no concerns but wanted an evaluation. Of those patients seen, 84% of all infants evaluated needed some monitoring, even the ones where the parents did not report any specific complaints. Of those who did not have an observable concern reported by the parents, 26% of the infants required either immediate treatment or monitoring for potential future treatments, including a risk for amblyopia. Analysis of the data found that eye problems with significant implications on health and proper visual development may not be easily detected by a parent, which underscores the importance of early vision assessments.

Untreated visual disorders are a major problem for school-age children. A recent publication by the Children's Health Fund and the Council of School Supervisors and Administrators in New York City reported the results of a survey of New York City's 1700 public school principals and assistant principals which looked at barriers to learning. The survey found that poor health has a major impact on a student's ability to learn.⁵ In terms of medical problems that affect learning, asthma topped the list closely followed by vision problems, which were reported as a barrier to learning by 57% of respondents. Vision problems affected learning to a more significant degree in higher poverty schools (60%) than

lower poverty schools (42%). In addition, in higher poverty schools, 38% of the respondents said the school needed help following up with children who failed vision screening.

Children's vision is crucial to their development and vision problems can be missed in babies and young children, this is especially true in underserved minorities and in children living in poverty. Undiagnosed visual problems can lead to amblyopia, poor visual perception, and increasing refractive errors. If untreated these problems will persist into the school setting and are proving to be a major barrier to learning in the classroom. Although we may not be able to find easy answers to the societal problems of poverty and chronic health disparities, we can much more easily ensure that our children with vision problems are treated early and effectively.

As pediatricians we need to be vigilant and aware of the potential problems, especially in our high-risk populations. We need to start referring for assessment of visual problems early and then begin treatment to prevent vision loss and other significant barriers to learning by the time these children reach school age. We should all be advocating for early vision assessments for our patients and be aware of federally supported public health programs such as the InfantSEE program, which provides comprehensive evaluations for infants. Information on the InfantSEE program can be found at <http://www.infantsee.org>.

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References

1. Boyle CA, Boulet S, Schieve LA, et al. Trends in the prevalence of developmental disabilities in US children, 1997-2008. *Pediatrics*. 2011;127:1034-1042.
2. Committee on Practice and Ambulatory Medicine, Section on Ophthalmology. American Association of Certified Orthoptists; American Association for Pediatric Ophthalmology and Strabismus; American Academy of Ophthalmology. Eye examination in infants, children, and young adults by pediatricians. *Pediatrics*. 2003;111(4 pt 1):902-907.
3. American Optometric Association. *Pediatric Eye and Vision Examination*. 2nd ed. St Louis, MO: American Optometric Association; 2002.

4. Chung-Lock I, Duan J, Mozlin R. A report on the eye and vision problems of patients under the age of 1 year in an academic-based urban clinic. *Optometry Vis Dev.* 2008;39:206.
5. Children's Health Fund and the Council of School Supervisors and Administrators (CSA). Crisis in the classroom: how untreated medical problems are seen to interfere with school performance. A survey of New York City public school leadership. http://www.childrenshealthfund.org/sites/default/files/crisis_in_the_classroom-10-14.pdf. Accessed November 25, 2013.