

New Guidelines for Pediatric Vision Screening Could Hinder Detection of Retinoblastoma

Revised recommendations for vision screening in children may miss retinoblastoma and other visual impairments, experts say.

BY CALLAN NAVITSKY, ASSOCIATE EDITOR

In January 2011, the US Preventive Services Task Force (USPSTF) updated 2004 guidelines that had recommended vision screening for all children younger than 5 years of age. The revised guidelines, published online January 31 in *Pediatrics*, recommend vision screening for all children at least once between the ages of 3 and 5 years. The USPSTF, however, no longer recommends the screening of children under 3 years of age—a change that some pediatric ophthalmologists and ophthalmic organizations say could have potential implications on the detection of several visual impairments, including retinoblastoma.

REVISED RECOMMENDATIONS

To formulate its new guidelines, the USPSTF considered evidence from a systematic review of the association of screening for visual impairment in children aged 1 to 5 years with improved health outcomes, the accuracy of risk factor evaluation and screening tests, the efficacy of early detection and intervention, the potential harms of screening and treatment, and the net benefit of screening in this population.

Based on its review, the USPSTF recommends vision screening for all children at least once between the ages of 3 and 5 years to detect the presence of amblyopia or its risk factors. “The USPSTF found adequate evidence

that vision screening tools have reasonable accuracy in detecting visual impairment, including refractive errors, strabismus, and amblyopia,” the USPSTF report¹ stated. “The USPSTF concludes with moderate certainty that vision screening for children 3 to 5 years of age has a moderate net benefit.”

For children under the age of 3, however, the USPSTF concluded that the current evidence is insufficient to assess the balance of benefits and harms of vision screening. “The USPSTF concludes that the benefits of vision screening for children <3 years of age are uncertain and that the balance of benefits and harms cannot be determined for this age group,” the report said.

CRITICISM OF REVISIONS

In March 2011, an editorial responding to the new guidelines was published online in *Pediatrics*² by lead author Sean P. Donahue, MD, PhD, Chief of Pediatric Ophthalmology at Vanderbilt University Children’s Hospital in Nashville, TN. The commentary was written on behalf of the American Academy of Ophthalmology; the American Academy of Pediatrics, Ophthalmology Section; the American Association for Pediatric Ophthalmology and Strabismus; the Children’s Eye Foundation; and the American Association of Certified Orthoptists.

In the editorial, the authors first commended the USPSTF's recommendation for vision screening of all children at least once between the ages of 3 and 5 years. "Amblyopia is the leading cause of monocular visual impairment in US children," the authors wrote. "Early detection is critical, because there is a window for successful treatment. Hence, this recommendation is an important step toward elimination of a major preventable cause of lifelong visual loss."

However, the authors voiced concerns about the USPSTF's finding of "insufficient evidence" for screening children less than 3 years of age. "The task force said that there is really no evidence that vision screening is effective in detecting things that need to be detected in children of this age," Dr. Donahue said in an interview with *Retina Today*.

"Congenital cataracts occur in somewhere between 1 in 1000 and 1 in 10 000 children, and if not removed within the first few weeks of life, that child is left with an eye that will be permanently blind. Rehabilitation is not possible," Dr. Donahue said. "The idea that the USPSTF would tell pediatricians that there is inadequate evidence to do any type of screening when you have volumes of evidence in the literature that this is a blinding condition if not detected is a gross injustice for children. Further, failure to detect retinoblastoma in a pediatrician's office will not just lead to blindness; it will lead to death."

Darius M. Moshfeghi, MD, of Stanford University School of Medicine in California, noted in an email to *Retina Today* that the USPSTF recommendations state that the evidence was insufficient to recommend screening for children between the ages of 1 and 3 years. The guidelines did not, however, address vision screening in children younger than 1 year.

"They did not evaluate the evidence of screening for children less than 1 year, which in my patient population, is the greatest risk period for vision loss," Dr. Moshfeghi said. "If a child has a hemorrhage, mass, retinal detachment, cataract, glaucoma, or infection affecting 1 or both eyes in the newborn-to-3-months period, this has to be identified, monitored, and, if necessary, treated as soon as possible to prevent vision loss."

SCREENING METHODS AND INTERVALS

In the editorial, the authors on behalf of the pediatric and ophthalmology groups agreed with the USPSTF that it is generally not possible to perform visual acuity and stereoacuity screenings in children younger than 3 years. Therefore, the editorial authors stated, red-reflex testing and autorefractometry or photorefractometry should be the preferred screening methods in this age group; however, red-reflex testing was not addressed in the USPSTF's report.

"Failure to detect retinoblastoma in a pediatrician's office will not just lead to blindness; it will lead to death."

– Sean P. Donahue, MD, PhD

"Red-reflex testing in the backbone of infant and toddler screening but was omitted from the USPSTF statement," Donahue et al wrote. "Assessment of the fundus 'red reflex' with a direct ophthalmoscope should be performed in the newborn nursery at regular intervals during infancy to rule out retinoblastoma, cataract, and other media opacities."

"Red-reflex testing is important in that it provides immediate information about whether urgent ophthalmological exam is warranted," Dr. Moshfeghi said. Agreeing that red-reflex testing should be performed during regular pediatric wellness exams, Dr. Moshfeghi noted that "It is easy, the equipment is almost universally included in every exam room, and a positive result with an experienced pediatrician is worth investigating."

Further, in its 2010 report the USPSTF failed to recommend an interval at which screening should be performed, Dr. Donahue noted. "We recommend traditional screening in the pediatrician's office at the 1-month, 18-month, and 24-month well baby visits, and, if there is an abnormality noted, the pediatrician should refer the patient to a pediatric ophthalmologist," he said.

PEDIATRICS CASE REPORT

In October, Dr. Donahue and colleagues published a case report in *Pediatrics* that, according to Dr. Donahue, exemplifies the importance not only of screening children under the age of 3 years, but also of periodic screening.

The report detailed the case of a 2-year-old previously healthy patient. The child was seen by her pediatrician for a routine wellness exam, during which the pediatrician noted no problems. One month later, the patient was given a standard vision evaluation at her preschool that included an autorefractor test. The results of the automated screening were normal for both sphere and cylinder in each individual eye and for intraocular difference in refraction.

Six months after that exam, however, the child presented to her pediatrician with a 2-week history of leukocoria. The pediatrician referred the child to a pediatric ophthalmologist who noted a large, bilobed, irregular mass that extended from the nasal periphery and was overlying the central visual axis. A red-reflex test in the child's

left eye was distinctly abnormal, and a computed tomography scan showed calcification suggestive of retinoblastoma. Pathology reports confirmed this diagnosis, and the child's affected eye was enucleated.

"This child had been screened, but the tumor had not initially been detected, probably because it was too small. It continued to grow and eventually came to attention, and that is why you cannot do just 1 screening; it is a continuous process at all of the well child visits," Dr. Donahue said. "Most kids with retinoblastoma are diagnosed around 1 year, and the ones who have it in just 1 eye are typically diagnosed between 18 and 24 months—in that same period where pediatricians are supposed to be screening and where the USPSTF has said it is no longer necessary."

FUTURE IMPLICATIONS

It is difficult to determine the influence of the USPSTF's recommendations; however, problems could arise if a payer, based on the "insufficient evidence" claim, decides to stop paying for vision screenings in children under 3 years of age, Dr. Donahue said. In that event, pediatricians would no longer be reimbursed and would therefore stop performing these screenings.

"The two most common presenting signs of retinoblastoma are leukocoria and strabismus. These would both be picked up on routine screening of infants <3; however, since this does not universally occur presently, I doubt that removing the recommendation to screen children <3 would impact the diagnosis much," Dr. Moshfeghi said. "Conversely, universal screening by age 2.5 would likely capture the vast majority of cases."

"I am greatly concerned that this statement will be misinterpreted to imply that there is no benefit to screening, that this applies to children <1 year, and that many treatable diseases will be missed because of a sense of complacency that may be inferred by some from the report's recommendations," Dr. Moshfeghi explained.

Fortunately, Dr. Donahue said, a number of organizations, including the American Academy of Pediatrics and the American Academy of Ophthalmology, have issued guidelines that are in distinct contrast to those drafted by the USPSTF. "We hope that the USPSTF guidelines can be tempered a little bit in their implementation," he said. ■

1. US Preventive Services Task Force. Vision screening for children 1 to 5 years of age: US Preventive Services Task Force recommendation statement. *Pediatrics*. 2011;127:340-346.

2. Donahue SP, Ruben JB; American Academy of Ophthalmology; American Academy of Pediatrics, Ophthalmology Section; American Association for Pediatric Ophthalmology and Strabismus; Children's Eye Foundation; American Association of Certified Orthoptists. US Preventive Services Task Force vision screening recommendations. *Pediatrics*. 2011;127(3):569-570.

3. Estopinal CB, Donahue SP, Gitschlag GN. Retinoblastoma in a child after normal autorefraction and traditional vision screening [published online ahead of print October 3, 2011]. *Pediatrics*. doi:10.1542/peds.2011-0325.