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Sean P. Donahue, James B. Ruben and 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  
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# US Preventive Services Task Force Vision Screening Recommendations

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## ABBREVIATION

USPSTF—US Preventive Services Task Force

Opinions expressed in these commentaries are those of the author and not necessarily those of the American Academy of Pediatrics or its Committees.

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We commend the recent recommendation by the US Preventive Services Task Force (USPSTF) for vision screening of all children at least once between the ages of 3 and 5 years.<sup>1</sup> Amblyopia is the leading cause of monocular visual impairment in US children. Several high-quality, randomized controlled clinical studies have shown that amblyopia treatment is highly successful.<sup>2</sup> Early detection is critical, because there is a window for successful treatment. Hence, this recommendation is an important step toward the elimination of a major preventable cause of lifelong visual loss. The USPSTF recommendation is consistent with the American Academy of Pediatrics "Recommendations for Preventive Pediatric Health Care,"<sup>3</sup> and *Bright Futures Guidelines for Health Supervision of Infants Children and Adolescents*,<sup>4</sup> both of which recommend universal screening for vision at the 3-, 4-, and 5-year health supervision visits.

Although we support the task force recommendation to provide vision screening for children aged 3 to 5 years, we are concerned about the finding of "insufficient evidence" (I) for screening children under the age of 3. Figure 1 in the recommendation<sup>1</sup> notes that current practice for these younger children is "assessment of visual acuity, strabismus, and stereoacuity." The USPSTF "current practice" of evaluation of visual acuity and stereoacuity is typically not possible in the child younger than 3 years; therefore, red-reflex testing and either photorefractive or autorefractive are the preferred means for screening such children. Red-reflex testing is the backbone of infant and toddler screening but was omitted from the USPSTF statement. Assessment of the fundus "red reflex" with a direct ophthalmoscope should be performed in the newborn nursery and at regular intervals during infancy to rule out retinoblastoma, cataract, and other media opacities. Failure to detect causes of deprivation amblyopia (such as congenital cataract) in the first few months of life results in irreparable, severe, and permanent visual loss. Failure to detect retinoblastoma will produce unnecessary loss of the eye or life. It would be unethical to perform a prospective randomized controlled study on children younger than 3 years with red-reflex testing versus no red-reflex testing; therefore, it is unlikely that any such study will ever be undertaken.

New technologies that detect amblyopia risk factors are now commercially available. These autorefractors and photoscreeners have been extensively validated in specialized<sup>5-7</sup> and community<sup>8-10</sup> settings and are specifically mentioned as screening tests in the USPSTF statement. A recent randomized controlled crossover study revealed that photoscreening was superior to traditional vision screening in the pediatric office in detecting preschool-aged children with amblyopia or its risk factors.<sup>11</sup> As noted in the USPSTF statement, such technology is more expensive than traditional screening and may result in children being overreferred; nevertheless, it remains the preferred option for chil-

dren who are unable or unwilling to cooperate with traditional screening. The Children's Eye Foundation (the nonprofit foundation of the American Association for Pediatric Ophthalmology and Strabismus) has provided a summary of these new technologies, along with references to the literature that support the effectiveness of each of them.<sup>12</sup>

We also disagree with the conclusion that there is insufficient evidence for the benefit of amblyopia screening or treatment for children younger than 3 years. A large study of nearly 1000 children with anisometropia revealed that amblyopia typically develops in those with high-magnitude anisometropia before the age of 3, and after 3 years amblyopia prevalence remains constant, but its depth increases.<sup>13</sup> A German study of more than 100 children with strabismus revealed that children who had their refractive error corrected by no later than 30 months of age had a higher likelihood of

achieving 20/20 acuity than those treated at later ages.<sup>14</sup> A large study of children with amblyopia identified after photostereotyping referral (many of whom were under the age of 3 when screened) demonstrated a 78% success rate in achieving 20/30 acuity in the previously amblyopic eye.<sup>15</sup> Finally, a study of 149 children with hypermetropia identified with community photostereotyping had a lower rate of developing amblyopia or strabismus if treated than if untreated; moreover, no spectacle-treated children developed a strabismus that eventually required surgical correction.<sup>16</sup> Because accommodative strabismus typically develops between the ages of 2 and 4 years,<sup>17</sup> and because prolonged duration of ocular misalignment is associated with a higher likelihood of needing surgical correction, the results of these studies support the benefit of screening in this younger age group.

As we enter an era in which increasing emphasis is being placed on cost-

effectiveness and value, we fully support evidence-based guidelines that refine practice patterns. The treatment of amblyopia is an extremely cost-effective intervention.<sup>18</sup> Preschool vision screening identifies children with amblyopia so they can receive appropriate care. Newer technologies now allow the identification of amblyopia risk factors before strabismus and amblyopia develop and become entrenched, and evidence supports the effectiveness of treatment of children so identified. It should be emphasized that the I (inconclusive) rating given by the USPSTF for screening children younger than 3 years should not be misinterpreted as "ineffective." We welcome the USPSTF level B recommendation for at least 1 vision screening in the child aged 3 to 5 years and believe that there is now adequate evidence to support an earlier screening using photostereotyping or autostereotyping in younger children.

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